TUCHINA, V.S., kand.geograficheskikh nauk

World frieght traffic and prospects for its expansion. Trudy TSNIIMF 7 no.37:19-42 '61. (MIRA 15:3)
(Shipping)

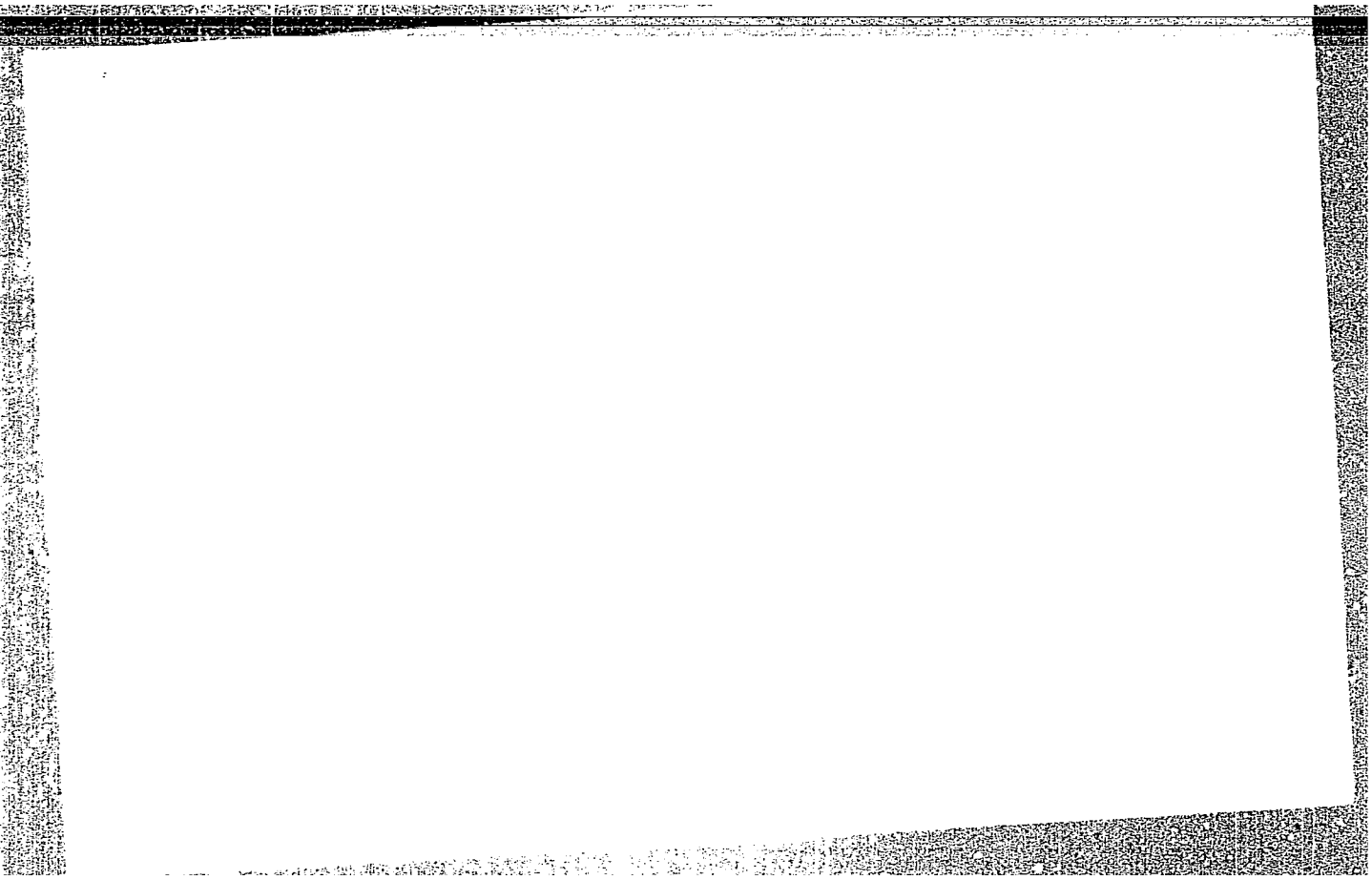
TUCHINA, V.S.; CHUPSHEVA, L.G.; SHIROKOV, S.I., red.; LAZAREVA, L.I., red.izd-va; USANOVA, N.B., tekhn. red.

[Merchant marine and freight indices]Torgovoe sudokhodstvo i frakhtovye indeksy. Moskva, Izd-vo "Morskoi transport," 1962. 221 p. (MIRA 16:4)

1. TSentral'nyy nauchno-issledovatel'skiy institut morskogo flota (for Tuchina). 2. Gosudarstvennyy proyektno-konstruktorskiy i nauchno-issledovatel'skiy institut morskogo transporta (for Chupsheva).
(Merchant marine--Statistics)
(Index numbers (Economics))

TUCHINA, V.S., kand. geogr. nauk

Development of freight rates under the present conditions of the capitalist freight market. Trudy TSNIIMF no.65: 34-42 '65. (MIRA 18:12)



APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757330007-8"

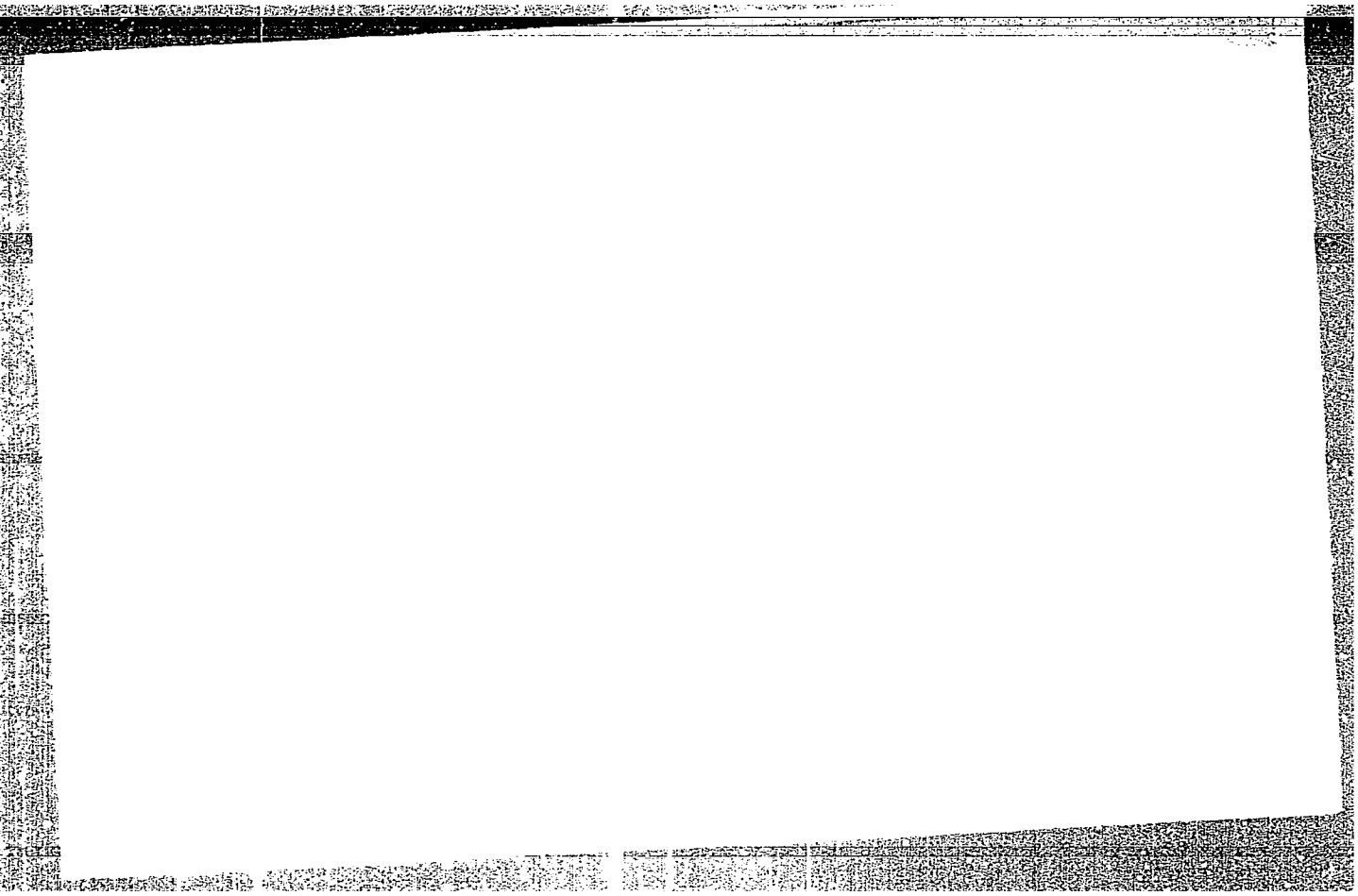
PAVLYUK, S.K., inzh.; TUCHINSKIY, F.M., inzh.

Welding of nonferrous metals and high-alloy steels. Khim.mashinostr. no.3:33-34 My-Je '64. (MIRA 18:1)

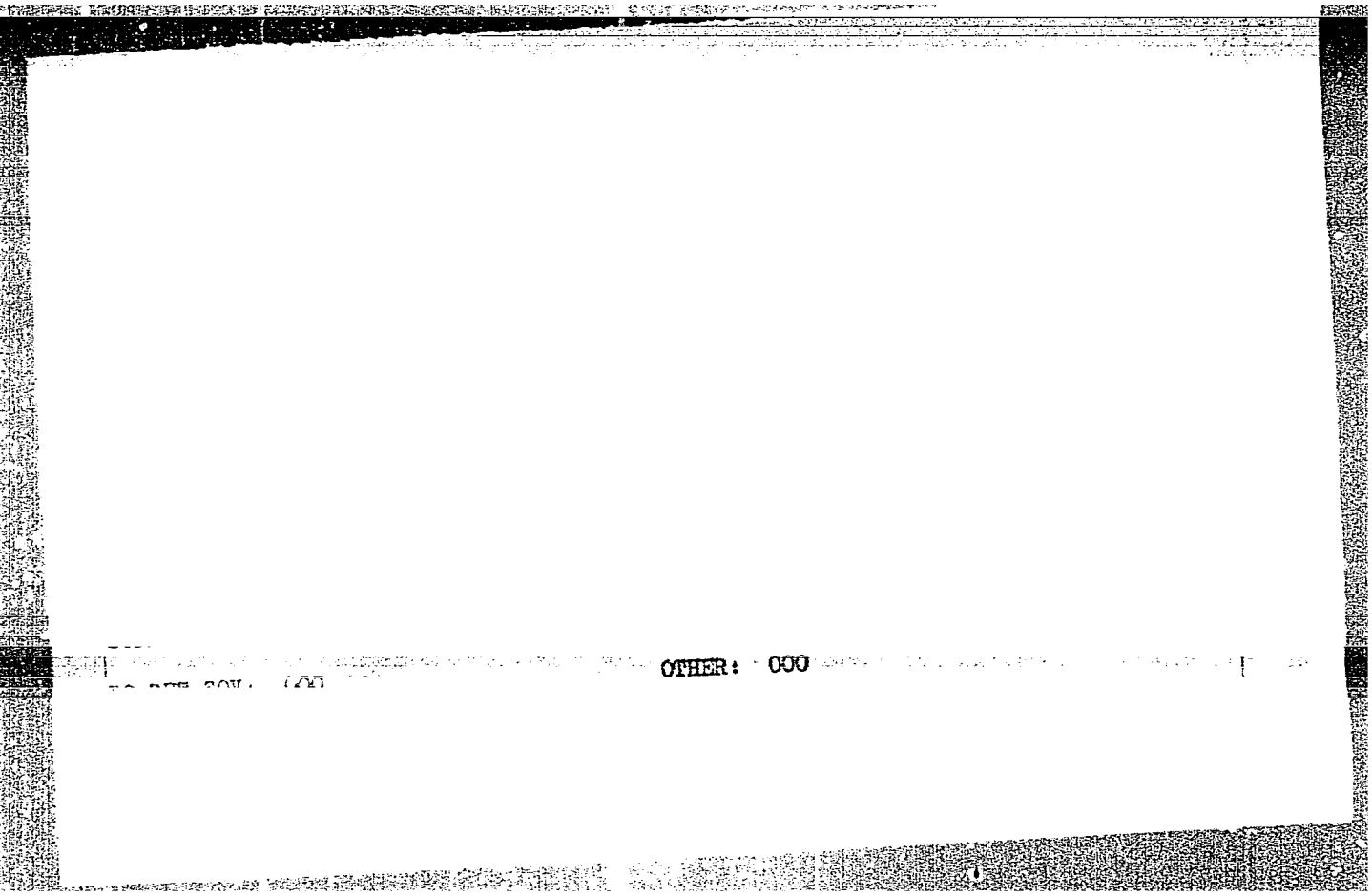
TUCHINSKIY, F.M., inzh.; SEMERNYA, I.A., inzh.

Nozzle for the welding head of the UDAR-300-I unit. Svar.proizv. no.4:39 Ap '64. (MIRA 18:4)

1. Berdichevskiy zavod khimicheskogo mashinostroyeniya "Progress".



APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757330007-8"



PAVLYUK, S.K., inzh.; TUCHINSKIY, F.M., inzh.

Welding of chemical apparatus made from titanium. Khim. mashinostr. (MIRA 17:7)
str. no.1:32-34 Ja'63

S/0184/64/000/003/0033/0034

ACCESSION NR: AP4039581

AUTHORS: Pavlyuk, S. K. (Engineer); Tuchinskiy, F. M. (Engineer)

TITLE: Welding of nonferrous metals and high alloy steels

SOURCE: Khimicheskoye mashinostroyeniye, no. 3, 1964, 33-34

TOPIC TAGS: steel welding, steel 1Kh18N9T, steel Kh18N12M2T, steel Kh18N12M3T, steel Kh23N18, steel OKh23N28M3D3T, steel Okh13, titanium, nickel, nickel NP 2, copper, high alloy steel, chromium nickel steel, argon arc welding, gas welding, flux welding, welder UDAR 300, solder NP 2, solder NMts 2.5, alloy VT 1, steel St. 3, ceramic flux ZhN 1, ceramic flux ZhN 2, electrode Progress 50, electrode Komsomolets 100, brass L62, electrode wire Sv 25Kh25N16G7, alloy TsL 8, filler Sv 05Kh19N9F3S2, filler Sv 04Kh19N9, filler Sv 07Kh25N13, semiautomatic welder, welder A 547, welder A 537, flux AN T1, flux AN T3, flux K 8, flux AN 26

ABSTRACT: A short review of different welding techniques applied to nonferrous metals and high-alloy steel is presented by the engineers of the plant "Progress" which specializes in the production of machinery and equipment for chemical plants. The methods used in this plant were grouped as follows: 1) manual arc welding with fusible or infusible electrodes under different protective gases;

Card 1/3

ACCESSION NR: AP4039581

2) automatic and semiautomatic welding with different flux types and filler metals. Infusible tungsten electrodes were used in the manual argon arc welding of high-alloy steel to thin sheets of titanium, nickel, and copper. The same technique was applied to the welding of steels OKh23N28M3D3T and St. 3 if metal thickness did not exceed 4 mm. The composition of filler metals was selected to be as close as was possible to that of the welded alloys, with the exception of nickel NP-2 (which showed best results with the use of NMts-2.5 wire), and of aluminum details. Welding of the latter required special devices such as the UDAR-300 machine. In manual arc welding, the electrodes "Progress-50" were used on nickel NP-2, and the electrodes "Komsomolets-100" on the welds of steel St. 3 to brass L62. The electrodes made of wire Sv-25Kh25N16G7 coated with the TsL-8 alloy were used in welding steels St. 3 to Kh23N18. Greater economy was achieved with the arc welding under carbon dioxide with fusible electrodes and with the Sv-05Kh19N9F3S2 wire used as a filler. These welds were made with the semiautomatic welders A-547 and A-537. The latter method was applied mainly to the chromium nickel steel 1Kh18N9T. Nickel alloy NP-2 was welded to different metals semiautomatically under the ceramic flux ZhN-1 or ZhN-2 with filler metals NP-2 and Sv 04Kh19N9. Machine parts made of titanium alloy VT-1 were welded semiautomatically under the flux AN-T1 or AN-T3 with a degassed filler (hydrogen content below 0.004%). The combinations of flux K-8 and filler Sv-04Kh19N9 or flux AN-26 and filler

Card 2/3

ACCESSION NR: AP4039581

Sv-05Kh19N9F3S2 were used in the joints of steel 1Kh18N9T or of a two-layer steel St. 3 + 1Kh18N9T. The best results were obtained in welding of acid-resistant metals with flux AN 26 and with Sv-07Kh25N13 filler. The men who developed these techniques for nickel and titanium welding at the plant "Progress" were rewarded with a VDNKh medal. Orig. art. has: 2 tables and 2 photographs.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 19Jun64	ENCL: 00
SUB CODE: MM	NO REF SOV: 000.	OTHER: 000

Card 3/3

PAVLYUK, S.K., inzh.; TUCHINSKIY, F.M., inzh.

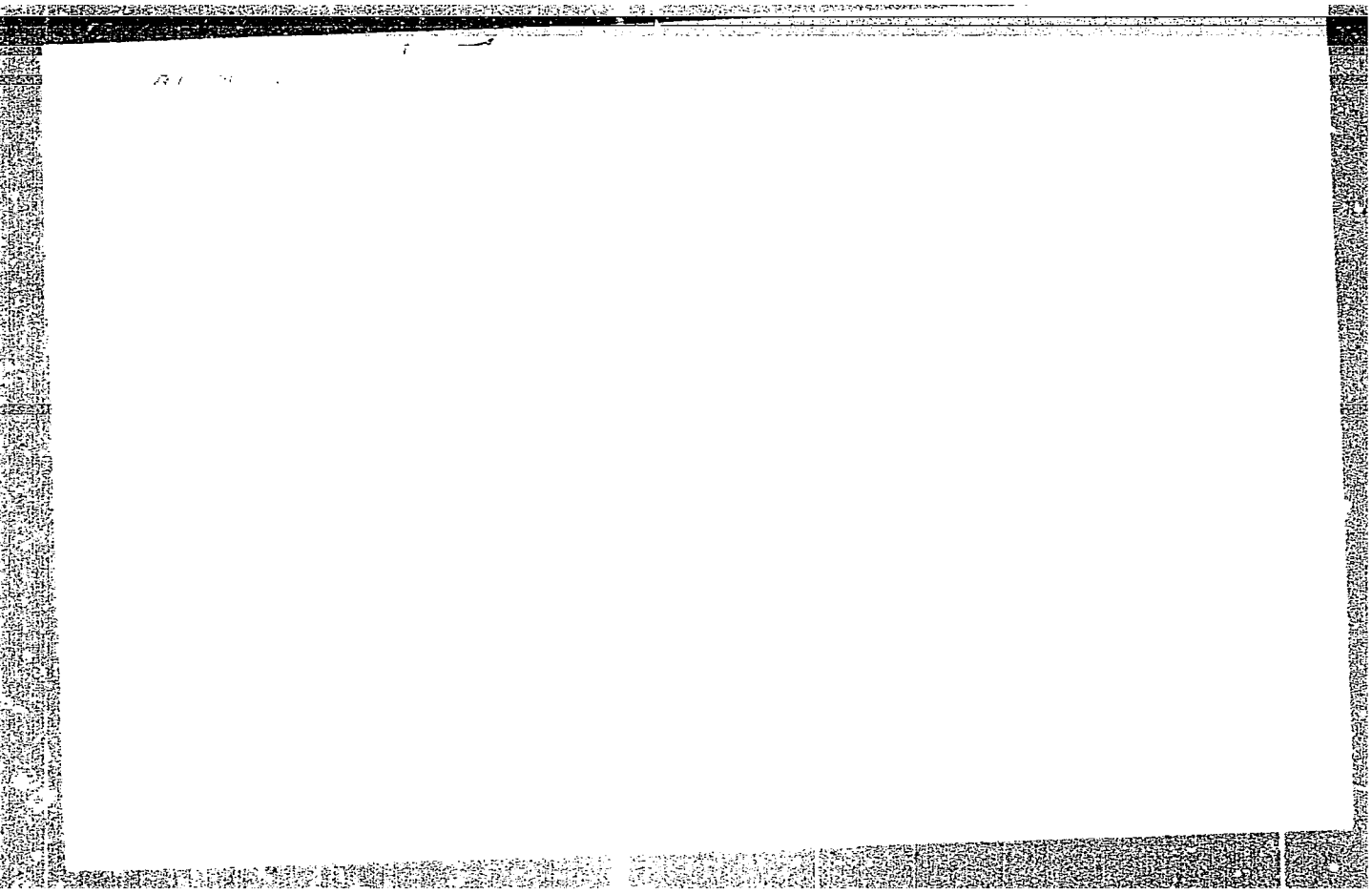
Some characteristics of the design and manufacture of chemical apparatus of titanium. Mashinostroenie no.1:45-48 Ja-F '63. (MIRA 16:7)

1. Kiyevskiy ordena Lenina politekhnicheskiy institut (for Pavlyuk). 2. Berdichevskiy mashinostroitel'nyy zavod "Progress" (for Tuchinskiy).
(Titanium) (Chemical apparatus)

TUCHINSKIY, G. K.

"On avalanche classification."

report to be presented at Intl Symp on Scientific Aspects of Snow and Ice Avalanches, Davos, Switzerland, 5 Apr-11 Apr 65.



APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001757330007-8"

TUCHINSKIY, L.I.

TIMAN, A.F.; TUCHINSKIY, L.I.

Approximation of differentible functions given on a finite segment by algebraic polynomials. Dokl.AN SSSR 111 no.4:771-772 D '56. (MLRA 10:2)

1. Predstavleno akademikom A.N.Kolmogorovym.
(Functions, Analytic) (Polynomials)

TUCINSKI, L.I.

SUBJECT: USSR/MATHEMATICS/Theory of approximations CARD 1/1 PG-638
AUTHOR TIMAN A.F., TUCINSKI L.I.
TITLE Approximation by aid of algebraic polynomials, of differentiable functions which are given on a finite interval.
PERIODICAL Doklady Akad.Nauk 111, 771-772 (1956)
reviewed 3/1957

Let the functions $f(x)$ be defined on $[-1,+1]$ and possess there the r-th derivative $f^{(r)}(x)$ $(r \geq 0)$ which satisfies the Lipschitz condition $|f^{(r)}(x_1)-f^{(r)}(x_2)| \leq M|x_1-x_2|^{\alpha}$ $(0 \leq \alpha < 1)$. Let $\hat{T}_0(x) = \sqrt{\frac{1}{\pi}}$, $\hat{T}_k(x) = \sqrt{\frac{2}{\pi}}\cos k \arccos x$, $k=1,2,\ldots$ and $c_k = \int_{-1}^{+1} \frac{f(t)\hat{T}_k(t)}{\sqrt{1-t^2}}\,dt$. Let $S_n(f,x) = \sum_{k=0}^{n} c_k \hat{T}_k(x)$ be the partial sum of the corresponding Fourier-Čebyšev series. The authors prove the following theorem: For $n \to \infty$ uniformly with respect to all $x \in [-1,+1]$ the asymptotic equation

$$\sup_{\text{over all } f} |f(x)-S_n(f,x)| = \frac{2^{\alpha+1}M}{\pi^2}\,\frac{\ln n}{n^{r+\alpha}}\,(\sqrt{1-x^2})^{r+\alpha}\int_0^{\frac{\pi}{2}} t^{\alpha}\sin t\,dt + 0\left(\frac{1}{n^{r+\alpha}}\right) \qquad (r+\alpha>0)$$

is valid.

BLINNIK, Lazar' Borisovich; KOZLOV, Vladimir Vasil'yevich; TUCHINSKIY, Naum Vladimirovich; RAGAZINA, M.F., inzh., ved. red.; SAMOKHOTSKIY, A.I., inzh., red.; SOROKINA, T.M., tekhn. red.

[Efficient conditions for the aging of cast iron]Ratsional'nye rezhimy stareniia chugunnykh otlivok. Moskva, Filial Vses. in-ta nauchn.i tekhn. informatsii, 1958. 12 p. (Peredovoi nauchno-tekhnicheskii i proizvodstvennyy opyt. Tema 3. No.M-58-112/5) (MIRA 16:2)

(Cast iorn—Hardening)

TUCHINSKIY, N.V., inzh.

Fine planing of printing machinery parts. Vest.mashinostr. 42 no.7:71-73 Jl '62. (MIRA 15:8)
(Metal cutting)

ZERNYAKOV, Boris Stepanovich; TREBELEV, Aron Markovich; BURLAKOV, Vladimir Yevgen'yevich; POLIVANOV, Vasiliy Fedorovich; MANZON, Eduard Abramovich; DUNAYEV, Yuriy Andreyevich; UDAL'TSOV, A.N., glavnyy red.; MALOV, A.N., kand.tekhn.nauk, red.; TUCHINSKIY, N.V., inzh., red.; ZASLAVSKIY, M.L., inzh., red.; SMIRNOV, P.V., inzh., red.; NEUSYPIN, A.M., insh., red.

[New method of preparing aluminum alloys in electric furnaces; Efforts to avoid losses in brass smelting; Use of rolled metal with variable cross section for the manufacture of truck trailer axles; New design of rotor blades for low capacity hydraulic turbines; Lubricant collection in settling basins] Novyi sposob prigotovleniia aliuminievykh splavov v elektricheskikh pechakh; Bor'ba s poteriami pri plavke latuni; Primenenie prokata peremennogo secheniia dlia izgotovleniia osei avtoprits epa; Novaia konstruktsiia lopastei rabochikh koles gidroturbin maloi moshchnosti; Sbor masla v otstoinikakh. Moskva, 1956. 12 p. (Peredovoi proizvodstvenno-tekhnicheskii opyt. Ser.19. Ekonomiia materialov i novye materialy, primeniaemye v mashinostroenii. No.T-56-363/6). (MIRA 13:3)

1. Akademiya nauk SSSR. Institut nauchnoy i tekhnicheskoy informatsii.

(Technological innovations)

TUCHINSKIY, N.V.

TSYPIN, Izrail' Osipovich, kand.tekhn.nauk; OKUNEVA, A.I., inzh., vedushchiy red.; TUCHINSKIY, N.V., inzh, red.; SIMAKOV, A.T.,tekhn.red.

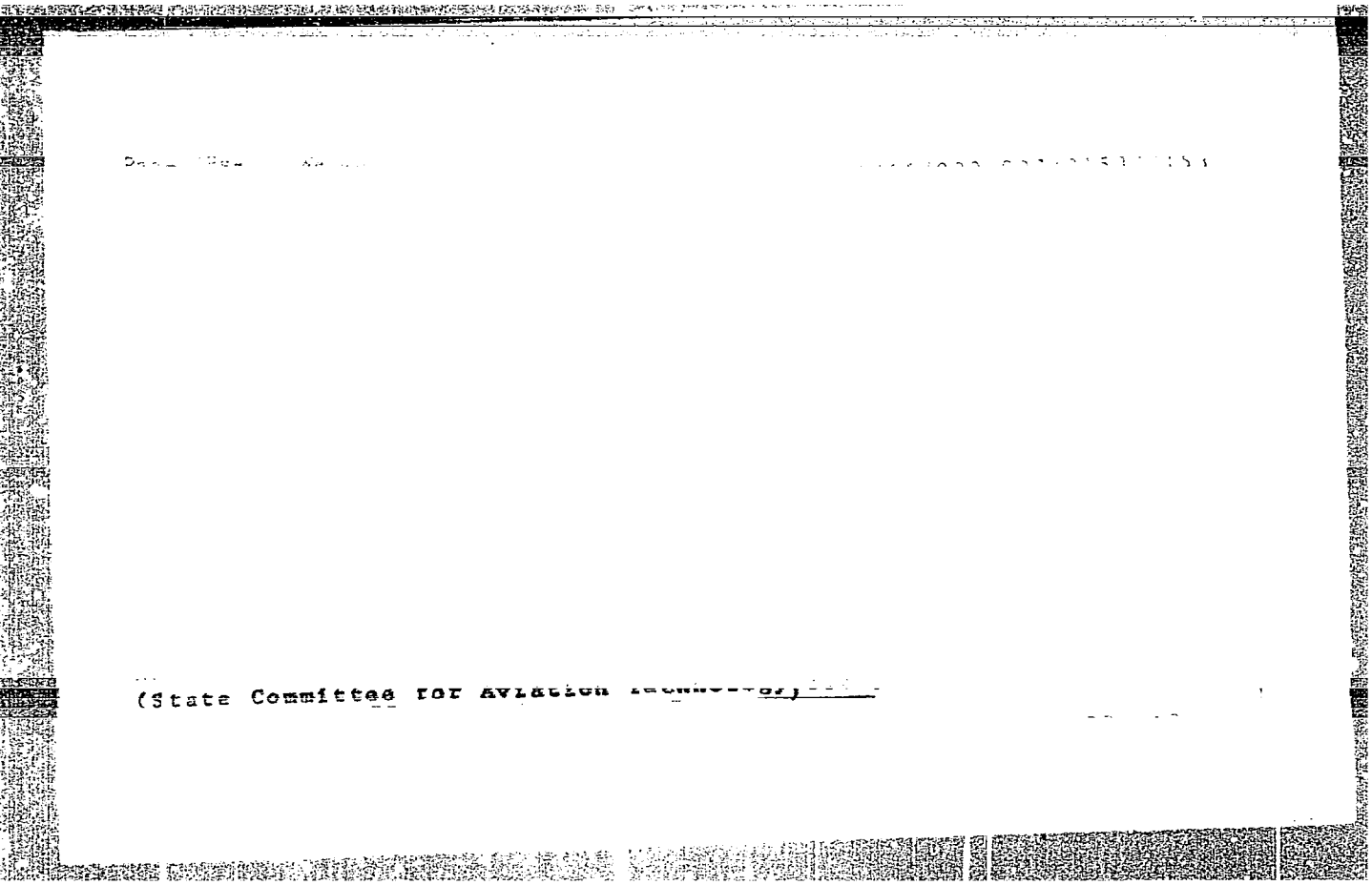
[Alloyed antifriction magnesium iron] Legirovannyi antifriktsionnyi magnievyi chugun. Moskva, Filial Vses.in-ta nauchnoi i tekhn. inform., 1956. 8 p. (Informatsiia o nauchno-issledovatel'skikh rabotakh. Tema 2, no.I-56-223) (MIRA 10:12)
(Iron-magnesium alloys)

SHAPIRO, Zal'man Berkovich, inzh.; OKUNEVA, A.I., inzh., vedushchiy red.; TUCHINSKIY, N.V., inzh., red.; SOROKINA, T.A., tekhn.red.

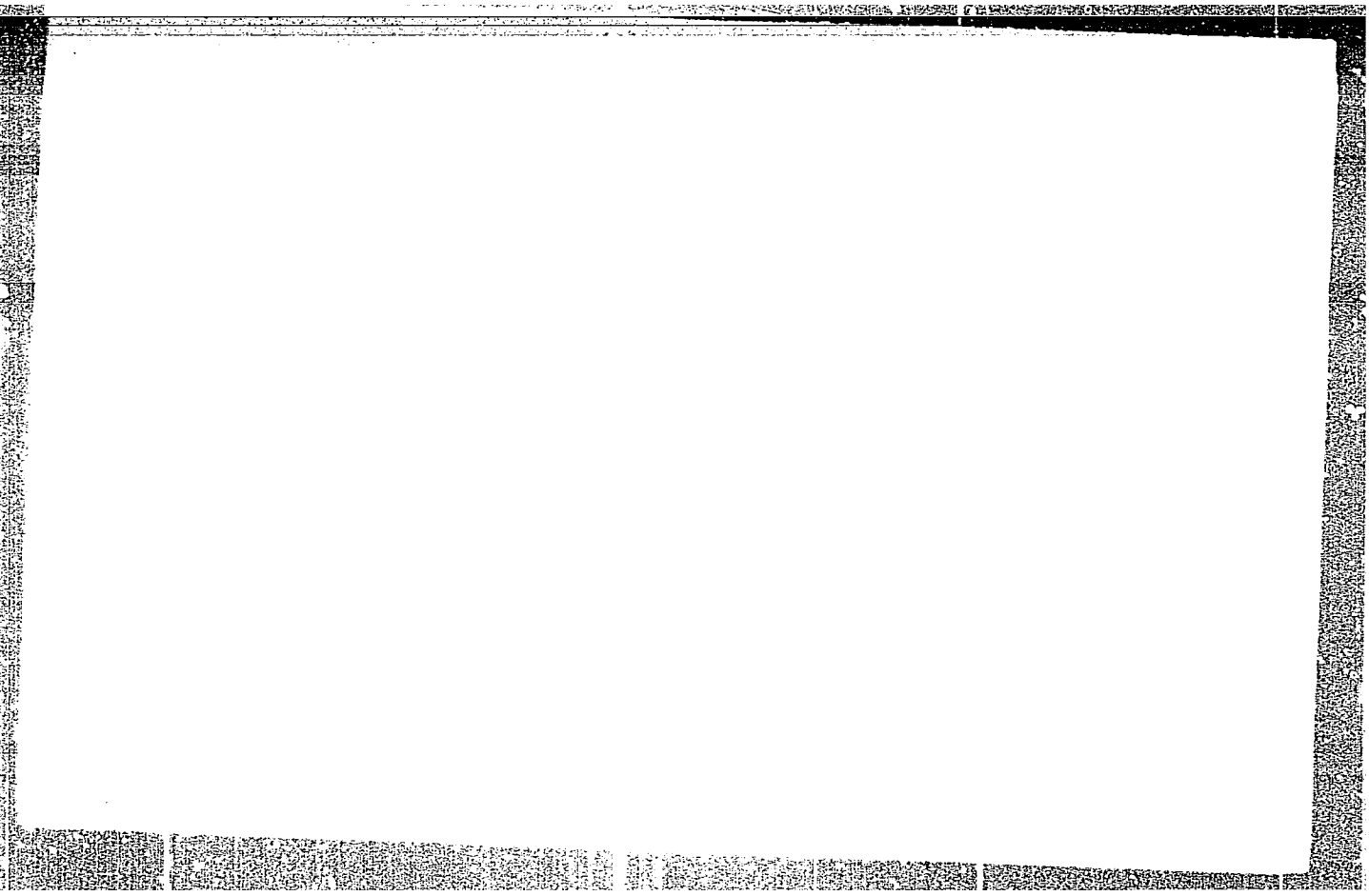
[Casting iron reinforcements in permanent molds] Lit'e chugunnoi armatury v postoiannye formy. Moskva, Filial Vses.in-ta nauchnoi i tekhn.inform., 1956. 9 p. (Informatsiia o nauchno-issledovatel'skikh rabotakh. Tema 2, no.I-56-218) (MIRA 10:12)
(Die casting)

TUCHINSKIY, Naum Vladimirovich; LAVROV, Gleb Aleksandrovich; ZAYTSEV, Nikolay Petrovich; KARATYGIN, A.M., dotsent, kand.tekhn.nauk, retsenzent; VOSKRESENSKIY, N.N., inzh., red.; TAIROVA, A.L., red.izd-va; CHERNOVA, Z.I., tekhn.red.

[Technology of printing-machinery manufacture] Tekhnologiia poligraficheskogo mashinostroeniia. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit.lit-ry, 1960. 376 p. (MIRA 13:7)
(Printing machinery and supplies)



(State Committee for Aviation



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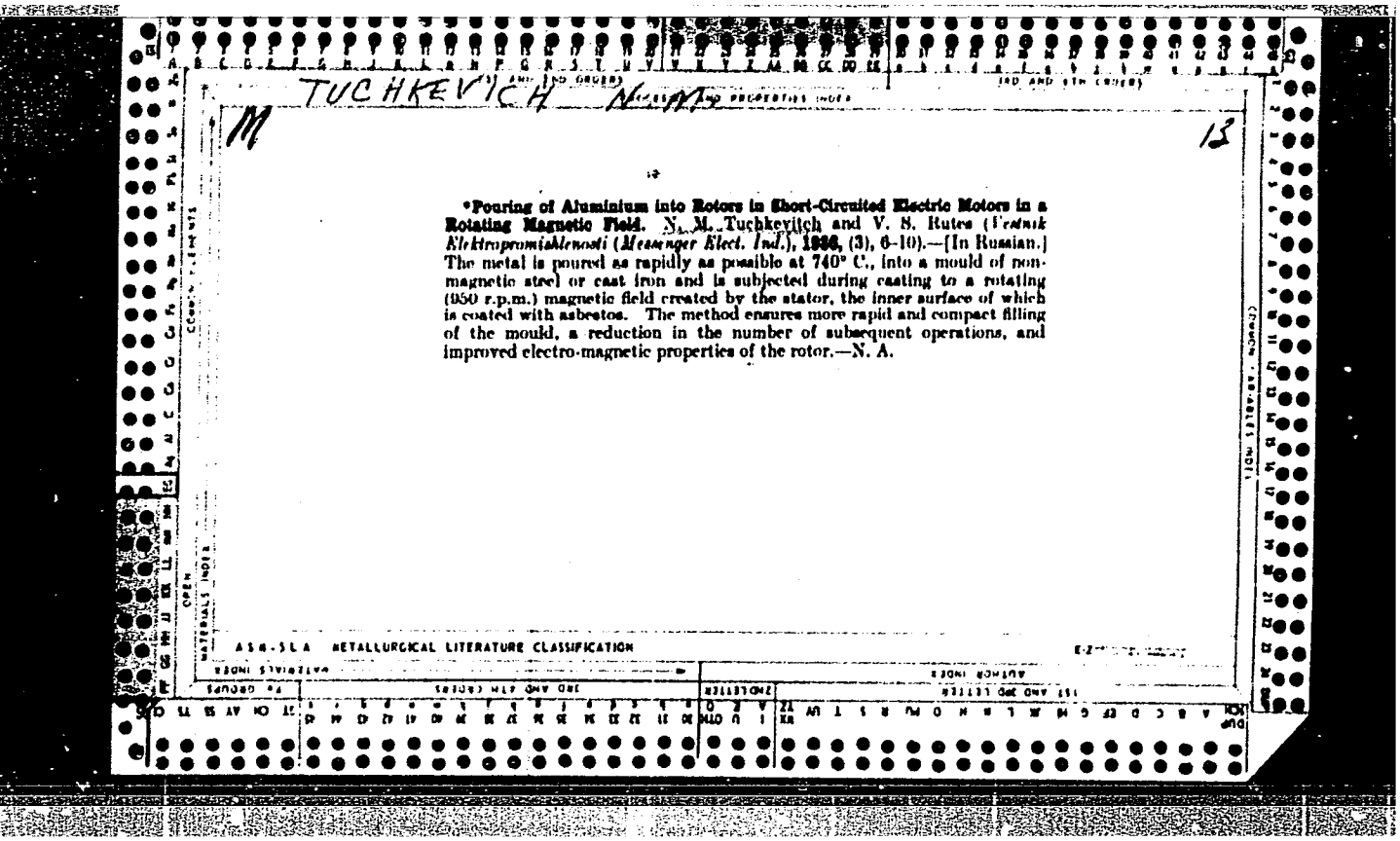
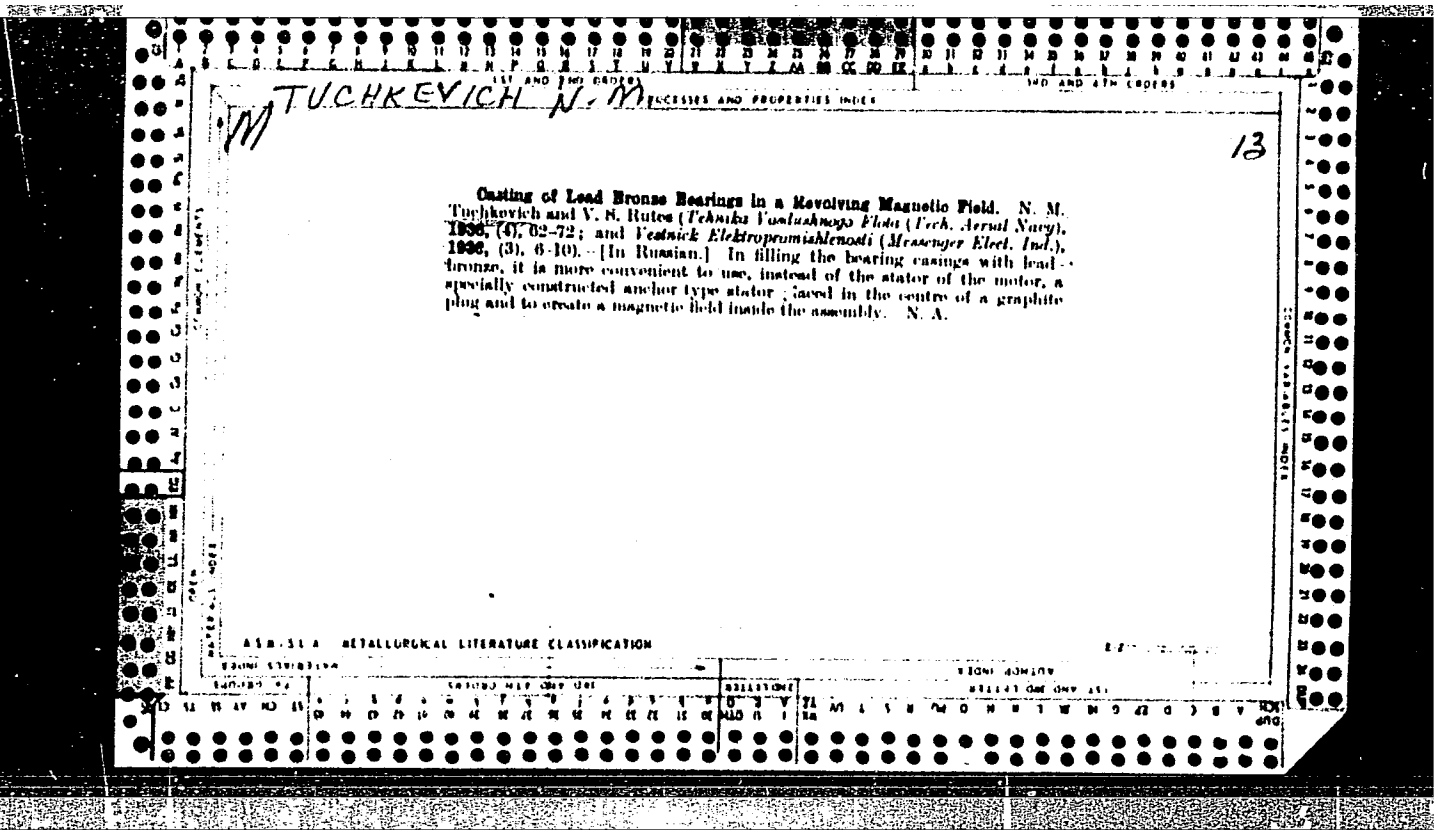


TUCHKEVICH

M

13

•**Pouring of Aluminium into Rotors in Short-Circuited Electric Motors in a Rotating Magnetic Field.** N. M. Tuchkevitch and V. S. Rutes (*Vestnik Elektropromishlennosti* (*Messenger Elect. Ind.*), **1936**, (3), 6-10).—[In Russian.] The metal is poured as rapidly as possible at 740° C., into a mould of non-magnetic steel or cast iron and is subjected during casting to a rotating (950 r.p.m.) magnetic field created by the stator, the inner surface of which is coated with asbestos. The method ensures more rapid and compact filling of the mould, a reduction in the number of subsequent operations, and improved electro-magnetic properties of the rotor.—N. A.



TUCHKEVICH N. M.

13

Casting of Lead Bronze Bearings in a Revolving Magnetic Field. N. M. Tuchkevich and V. S. Rutes (*Teknika Vozdushnogo Flota* (*Tech. Aerial Navy*), **1936**, (4), 62–72; and *Vestnick Elektropromishlennosti* (*Messenger Elect. Ind.*), **1936**, (3), 6–10).—[In Russian.] In filling the bearing casings with lead-bronze, it is more convenient to use, instead of the stator of the motor, a specially constructed anchor type stator ; fixed in the centre of a graphite plug and to create a magnetic field inside the assembly. N. A.

A.S.M.-S.I.A. METALLURGICAL LITERATURE CLASSIFICATION

TUCHKEVICH, N. M.

Steel Castings

Thin-walled steel casting. Lit. proizv., no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953. Unclassified.

TUCHKEVICH, N.M.

USSR/Miscellaneous - Foundry processes

Card 1/1 : Pub. 61 - 4/23

Authors : Tuchkevich, N. M.

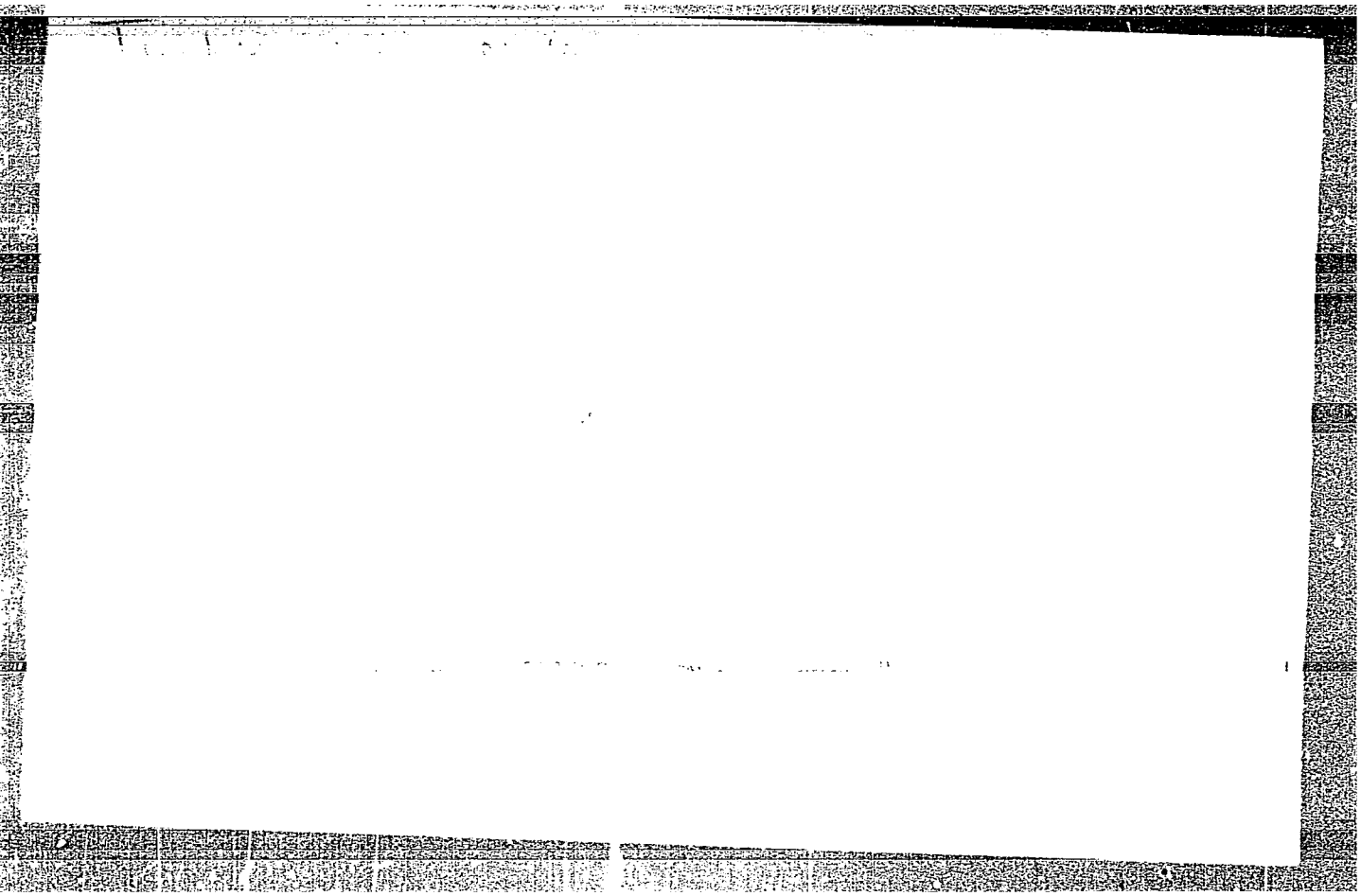
Title : Effect of casting technology on the strength of steel cast objects

Periodical : Lit. proizv. 3, 9-12, May-June 1954

Abstract : An investigation was conducted to determine the effect of technological casting and casting defects on the static strength of mold-casted steel products. The results of static tests of numerous thin-walled castings are shown in a table. Tables; drawings; illustration.

Institution : ...

Submitted : ...



KUZMAK, Ye.M.; KURDIN, A.I.; TUCHKEVICH, N.M.

Using hard alloys for three-dimensional reinforcement of bit milling cutters. Neft.khoz. 35 no.1:31-35 Ja '57. (MLRA 10:2)

(Cutting tools)

ACC NR: AP7003870 (N) SOURCE CODE: UR/0133/67/000/001/0039/0041

AUTHOR: Fomicheva, N. P.; Klyuyev, M. M.; Topilin, V. V.; Tuchkevich, N. M.; Doronin, V. M.; Dzugutov, M. Ya.; Terekhov, K. I.; Mikhin, T. A.

ORG: none

TITLE: Electroslag remelting of EI481 chromium-manganese-nickel heat resistant steel

SOURCE: Stal', no. 1, 1967, 39-41

TOPIC TAGS: chromium manganese ~~nickel~~ steel, heat resistant steel, steel melting, electroslag melting, steel composition, steel mechanical property/EI481 steel

ABSTRACT:

Cast EI481 high-alloy heat-resistant steel (0.34—0.40% C, 7.5—9.5% Mn, 11.5—13.5% E, 7.0—9.0% Ni, 1.1—1.4% Mo, 0.25—0.45% Nb, 1.3—1.6% V, 0.3—0.8% Si) was electroslag remelted under four different slags and tested for chemical composition, nonmetallic inclusions and mechanical properties. The best results were obtained with the use of standard or with 10% lime No. 4 slag of the CaF_2-CaO system. In all cases, electroslag remelting changed only slightly the steel composition. It decreased the content of manganese by 0.04—0.20 abs.% and of vanadium by 0.08 abs.%; the sulfur content decreased by 20—40%, but no substantial decrease was observed in the hydrogen and oxygen contents. The electroslag remelting also decreased

Card 1/2 UDC: 669.187.26

ACC NR: AP7003870

the content of nonmetallic inclusions from 98.7 to 52.3·10^{-4}% and resulted in more uniform distribution. No significant changes were observed in the mechanical properties of the electroslag remelted metal (all were above the technical requirements) but the anisotropy of the ductility characteristics decreased by 20—40%. In stress-rupture tests at 650C under a stress of 38 kg/mm^2, the steel remelted under No. 4 slag failed after 156 hr compared with 35 hr required for conventionally melted steel. Forged parts from electroslag remelted steel had a tensile strength of 112.0—104.0 kg/mm^2, a yield strength of 74.0—83.7 kg/mm^2, an elongation of 19.2—24.0%, a reduction of area of 31.2—43.9% and an impact toughness of 4.5—5.5 kg·m/cm^2. The corresponding figures for forgings of conventionally melted EI481 steel were 60 and 85 kg/mm^2, 15 and 20%, and 2.5 kg·m/cm^2. The electroslag remelting of EI481 steel can be recommended for increasing the service life of parts made from this steel. Orig. art. has: 2 tables. [MS]

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 002/ ATD PRESS: 5115

Card 2/2

IRININ, A.M.; GRECHIN, V.P.; TUCHKEVICH, N.M.

Effect of the rate of metal flow during vacuum arc refining on the properties of heat-resistant alloys. Stal' 23 no.2:133-135 F '63. (MIRA 16:2)
(Heat-resistant alloys--Electrometallurgy)
(Vacuum metallurgy)

TUCHKEVICH, N.M.; KOLOBASHKIN, B.M.

Making castings from a skin-sensitive alloy by centrifugal methods in vacuum and in a gas-shielded atmosphere. Lit.proizv. no.2:12-14 F '62. (MIRA 15:2)
(Centrifugal casting) (Protective atmospheres)

S/128/62/000/002/002/007
A004/A127

AUTHORS: Tuchkevich, N.M.; Kolobashkin, B.M.

TITLE: Producing castings from scab-sensitive alloys by the vacuum method and with gas shielding

PERIODICAL: Liteynoye proizvodstvo, no. 2, 1962, 12 - 14

TEXT: Although scab formation is practically absent in the centrifugal casting of heat-resistant alloys containing Cr, Al, Ti, etc., a great number of publications on vacuum casting and gas-shielded casting reveal that also in centrifugal casting a certain protection of the metal from oxidation is rather useful. The authors report on investigations carried out by V.N. Bukhteyev, Ye.G. Moskaleva, Ye.P. Frozorova and V.A. Zhabina to establish the effect of gas-shielded centrifugal casting to protect the metal from oxidation on the properties of scab-sensitive alloys. The centrifugal casting machine with vacuum chamber has been designed under the supervision of the authors and B.F. Milyayev, while it was built under the direction of V.L. Khersonskiy. A detailed description of the machine design and the specimen tests is given. Cast annular specimens were cut into templets and subjected to tests showing their physical-mechanical pro-

Card 1/3

Producing castings from scab-sensitive ....

perties, microstructure, heat resistance, specific gravity, and also for determining their gas content, nonmetallic inclusions and chemical composition as to the basic easily oxidizing metal elements. The test results revealed the positive effect of argon-shielded casting and vacuum casting on the strength, ductility and notch toughness of the alloy. [Abstracter's note: The alloy composition is not given.] Argon somewhat reduced the heat resistance of the metal, which can be explained by the considerable increase in ductility and notch toughness. Casting in a nitrogen medium increased the heat resistance, in comparison with casting in air, by 30 - 40%, while this increase amounted to 15 - 20% if casting was effected in a vacuum. The test results showed, however, that the amount of nonmetallic inclusions is rather insignificant in vacuum or gas-shielded casting. (Y .P. Prozorova determined the amount of nonmetallic inclusions in the alloy, while the gas content was determined by the hot-extraction method and the nitrogen content by the chemical method under the supervision of V.A. Zhabina.) The results showed that the use of a vacuum or gas shield, particularly argon, improved the metal purity during centrifugal casting of scab-sensitive alloys on nickel base and increased the heat resistance owing to the reduction in the gas content and nonmetallic inclusions. There are 6 figures and 12 refer-

Card 2/3

Producing castings from scab-sensitive ....

S/128/62/000/002/003/007
A004/A127

ences: 8 Soviet-bloc and 4 non-Soviet-bloc. The three references to English language publications read as follows: Czorniak, E.S., "Precision Metal Molding", v.15, no. 10, 1957; "Metal Industry", v. 92, no. 4, 1958; "Metal Progress", v. 73, no. 5, 1958.

Card 3/3

ALEKSANDROV, R.G.; BARBASHINA, Ye.G.; BAS'KO, K.P.; VARTAN'YAN, A.S.; VASILEVSKIY, P.F.; GLAGOLEVA, L.A.; DUBININ, N.P., prof., doktor tekhn. nauk; KONSTANTINOV, L.S.; KOROTKOV, A.I.; LESNICHENKO, V.L.; PANFILOV, Ye.A.; TRUBITSYN, N.A.; TUCHKEVICH, N.M.; FADEYEV, A.D.; FOKIN, G.F.; MARTENS, S.L., inzh., red.; SOKOLOVA, T.F., tekhn. red.

[Steel casting; foundrymen's handbook] Stal'noe lit'e; spravochnik dlia masterov litseinogo proizvodstva. Moskva, Gos. nauchno-tekhn. izdvo mashinostroit. lit-ry, 1961. 887 p. (MIRA 14:8)
(Founding)

TUCHKEVICH, N.M.; PETROVA, V.S.

Cast specimens for the control of mechanical properties in precision casting. Lit. proizv. no.9:20-22 S '58. (MIRA 11:10)
(Precision casting) (Founding--Testing)

AUTHORS: Tuchkevich, N.M., Petrova, V.S. SOV-128-58-9-8/16

TITLE: Cast Specimens for the Control of the Mechanical Properties of Precision Casting (Litye obraztsy dlya kontrolya mekhanicheskikh svoystv tochnogo lit'ya)

PERIODICAL: Liteynoye proizvodstvo, 1958, Nr 9, pp 20-22 (USSR)

ABSTRACT: The quality of cast material is tested by cutting out samples which are then subjected to the different tests. In the article, a method is investigated by which special samples are cast together with the other molds. These samples are tested. They show the same results only if the metal has the same density as the molds. In Figure 1, the forms of the samples are given: type a is used for testing blow viscosity, type b for testing breaking-resistance at high temperatures, type c for other breaking tests. The material used was stainless steel type Kh17N4, and the highly-resistant structural steel type 35KhGSL. The specimens were tested in vertical and horizontal positions (Figure 3). The results are given in Table 3. The results for cut-out and cast samples are nearly the same. Table 4 shows the results of the mechanical tests for steel type 35KhGSL. The differ-

Card 1/2

Cast Specimens for the Control of the Mechanical Properties of Precision Casting

ence in the plastic properties measured is explained by insufficient processing.
There are 4 tables, 2 sets of diagrams, 1 photo, and 4 Soviet references.

1. Metals--Casting 2. Metal castings--Test methods 3. Metal castings--Quality control

Card 2/2

TUCHKEVICH, T.M., kand. ekon. nauk, dots.

Calculating average efficiency in railroad transportation. Trudy KHIIT no.27:3-12 '58. (MIRA 11:6)
(Railroad--Management)

ANGELEYKO, V.I., doktor tekhn. nauk, prof.; TUCHKEVICH, T.M., kand. ekon. nauk, dots.; NAUMOV, G.K., kand. ekon. nauk, dots.

Improvements in planning and business accounting on track divisions. Trudy KHIIT no.27:29-44 '58. (MIRA 11:6)
(Railroad--Management)

TUCHKEVICH, T.M., kand. ekonom. nauk (Khar'kov)

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ORLOV, V.N., prof; SILAYEV, N.I., kand.ekon.nauk; KRIMNUS, G.Kh., kand.ekon. nauk; MAUMOV, G.K., kand.ekon.nauk; TUCHKEVICH, T.M., kand.ekon.nauk; KARASIK, V.Ya., kand.tekhn.nauk; GORDON, Ye.G., starshiy prepodavatel' (Khar'kov).

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(Railroads--Freight) (Transportation)
(Khachaturov, T.S.)

NAUMOV, G.K., kand.ekon.nauk; SILAYEV, N.I., kand.ekon.nauk; TUCHKEVICH, T.M., kand.ekon.nauk; KRIMNUS, G.Kh., kand.ekon.nauk; YELISEYEVA, T.V., inzh. (Khar'kov)

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(Railroads--Finance)

TUCHKEVICH, T.M., dotsent, kandidat ekonomicheskikh nauk.

Cost accounting for locomotive shed management. Trudy KHIIT no.24:5-18 '54. (MLRA 8:1)
(Locomotives--Repairs)

TUCHKEVICH, T.M., kandidat ekonomicheskikh nauk (Khar'kov); ADAMENKO, N.V., kandidat ekonomicheskikh nauk, inzhener (Khar'kov); KRIMNUS, G.Kh., inzhener (Khar'kov); LEMBERSKIY, A.Ya., (Khar'kov); NAUMOV, G.K., kandidat ekonomicheskikh nauk (Khar'kov); SILAYEV, N.I., kandidat ekonomicheskikh nauk, dotsent (Khar'kov); USHAKOV, P.S., (Khar'kov); EDEL'SHTEYN-UDYANSKIY, P.G., kandidat ekonomicheskikh nauk (Khar'kov).

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(Railroads--Management)

TUCHKEVICH, T.M.

NAUMOV, G.K., kandidat ekonomicheskikh nauk (Khar'kov); SILAYEV, N.I., kandidat ekonomicheskikh nauk (Khar'kov); TUCHKEVICH, T.M., kandidat ekonomicheskikh nauk (Khar'kov); YELISEYEVA, T.V., inzhener (Khar'kov); KRIMHUS, G.Kh., inzhener (Khar'kov).

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(Ukraine--Railroads--Cost of operation)

TUCHKEVICH, Tat'yana Maksimovna, kand. ekon. nauk; MIKHAL'TSEV, Ye.V., retsenzent [deceased]; PESKOVA, L.N., red.; BOBROVA, Ye.N., tekhn. red.

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(Railroads--Employees)

KON'KOV, P.S., , kand. tekhn.nauk, dots.; DONTSOV, A.Ya., inzh.;
YURCHENKO, I.F., inzh.; ANGELEYKO, V.I., retsenzent;
BABENKO, V.I., retsenzent; ZAPREVSKIY, G.S., retsenzent;
KRIMNUS, G.Kh., retsenzent; MANIN, I.I., retsenzent;
NAUMOV, G.K., retsenzent; TOLSTOSHEY, A.N., retsenzent;
TUCHKEVICH, T.M., retsenzent; FEDORETS, V.M., retsenzent;
FEL'DMAN, M.F., retsenzent; FRANKOV, N.Ya., retsenzent;
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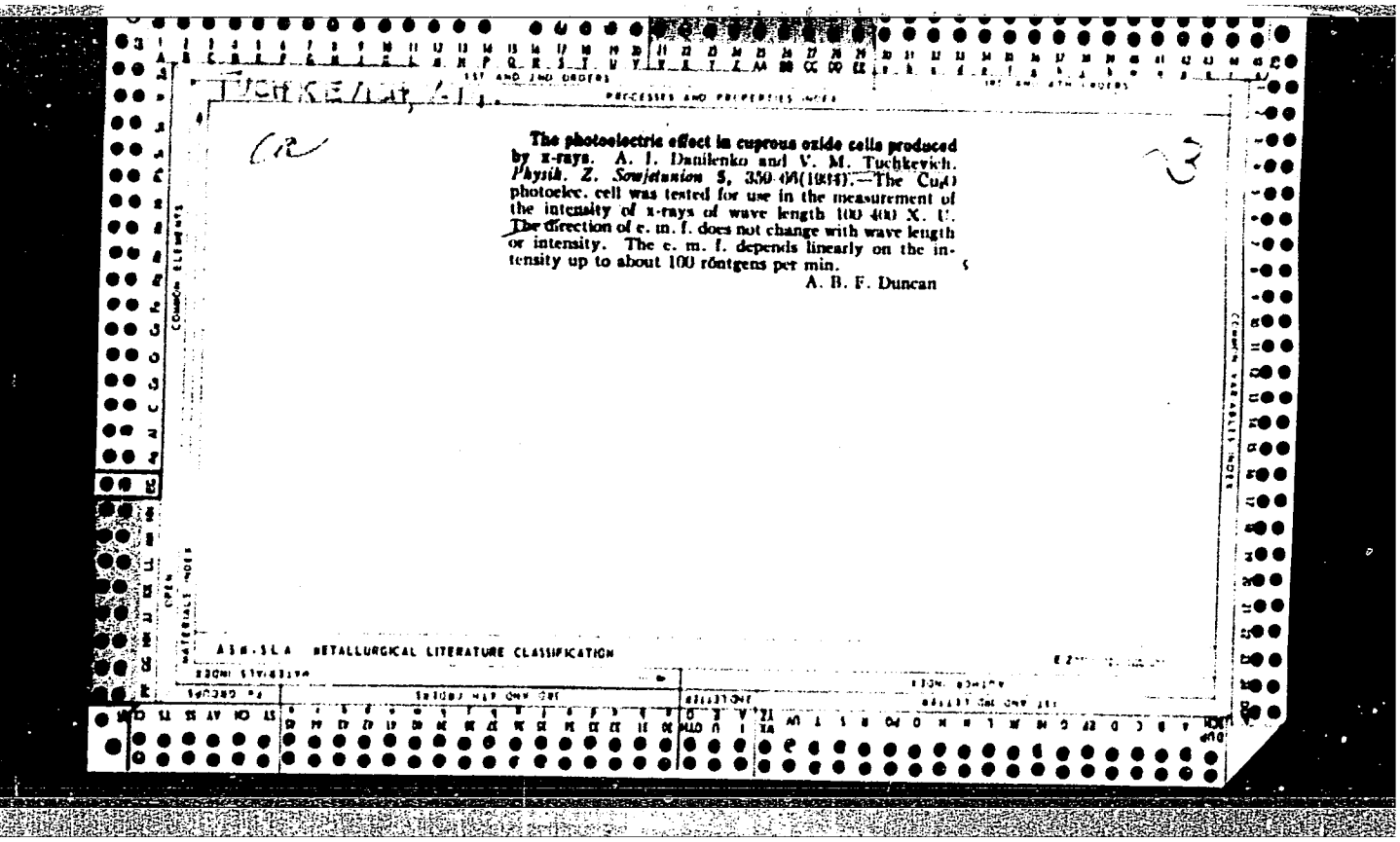

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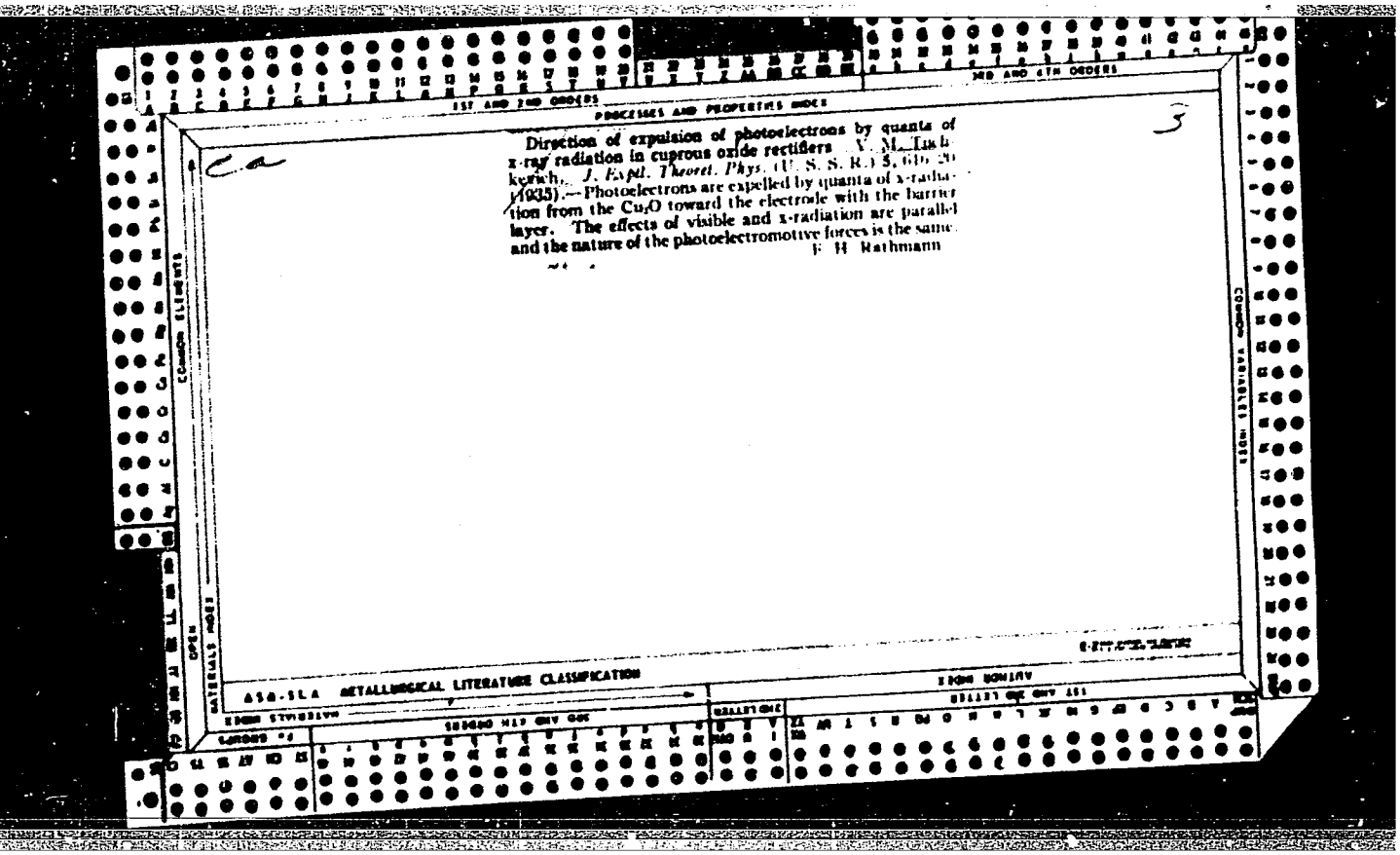
A. B. F. Duncan



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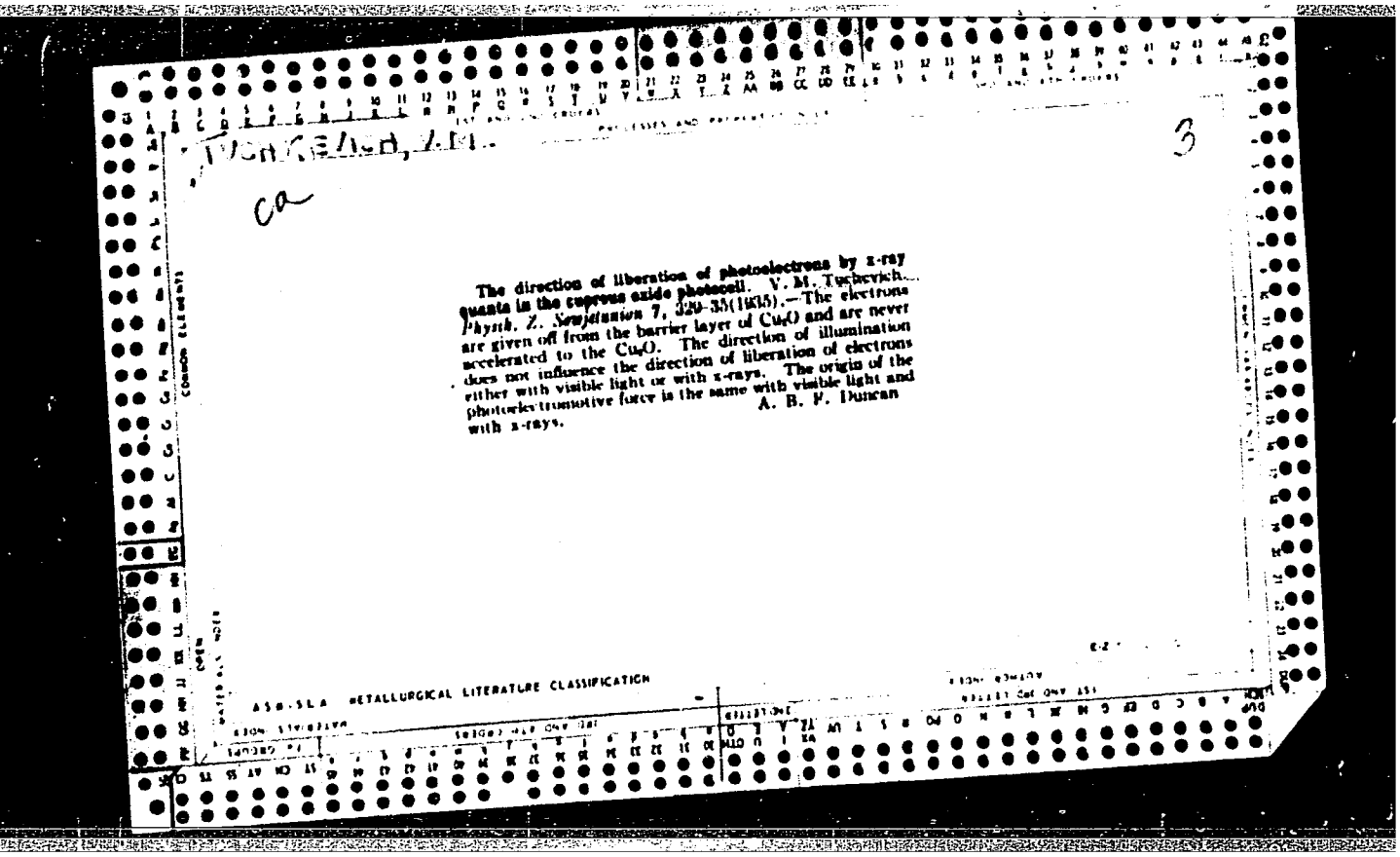
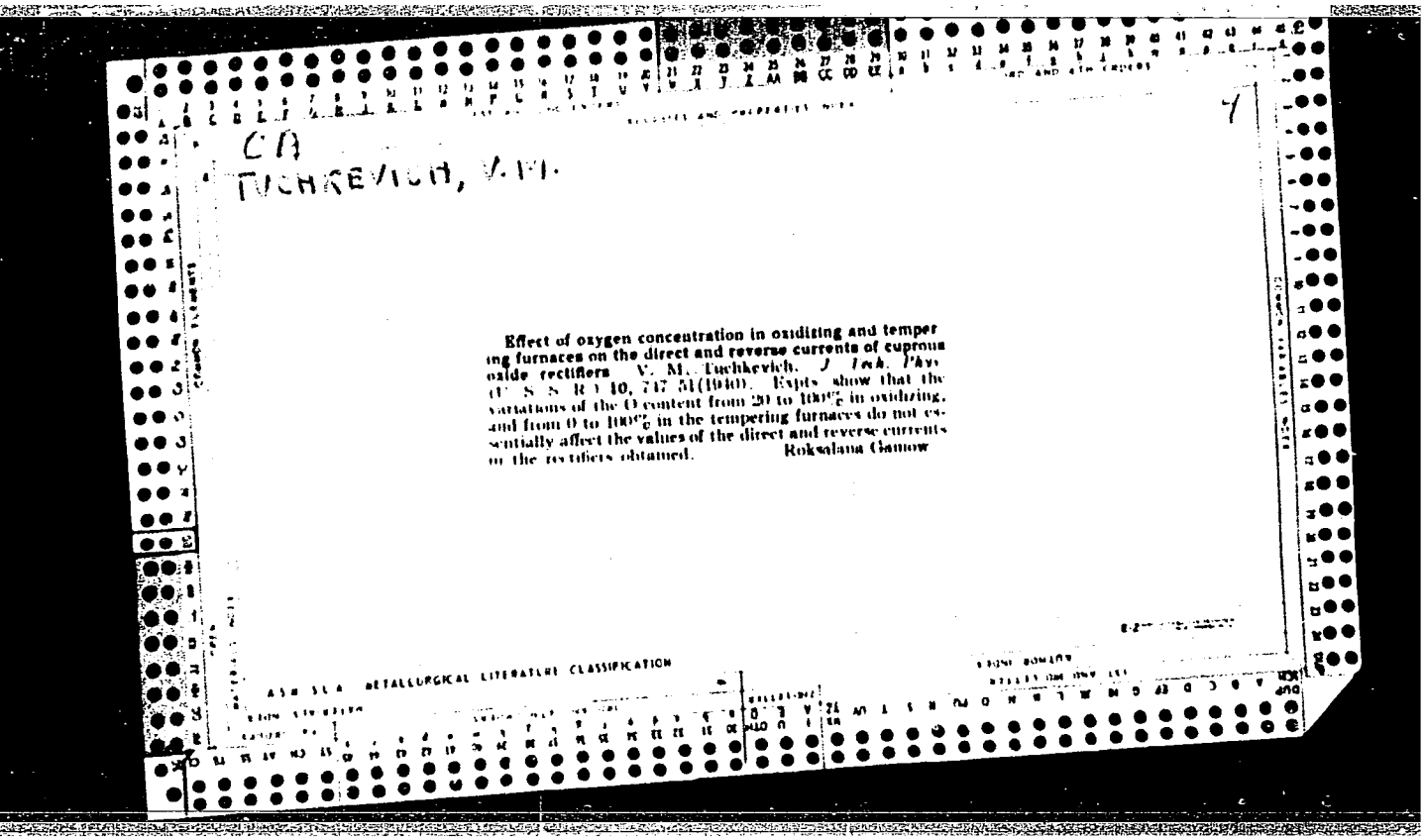


The direction of liberation of photoelectrons by x-ray quanta in the cuprous oxide photocell. V. M. Tuchkevich. *Physik. Z. Sowjetunion* 7, 329-35(1935).—The electrons are given off from the barrier layer of Cu_2O and are never accelerated to the Cu_2O. The direction of illumination does not influence the direction of liberation of electrons either with visible light or with x-rays. The origin of the photoelectromotive force is the same with visible light and with x-rays.
A. B. F. Duncan



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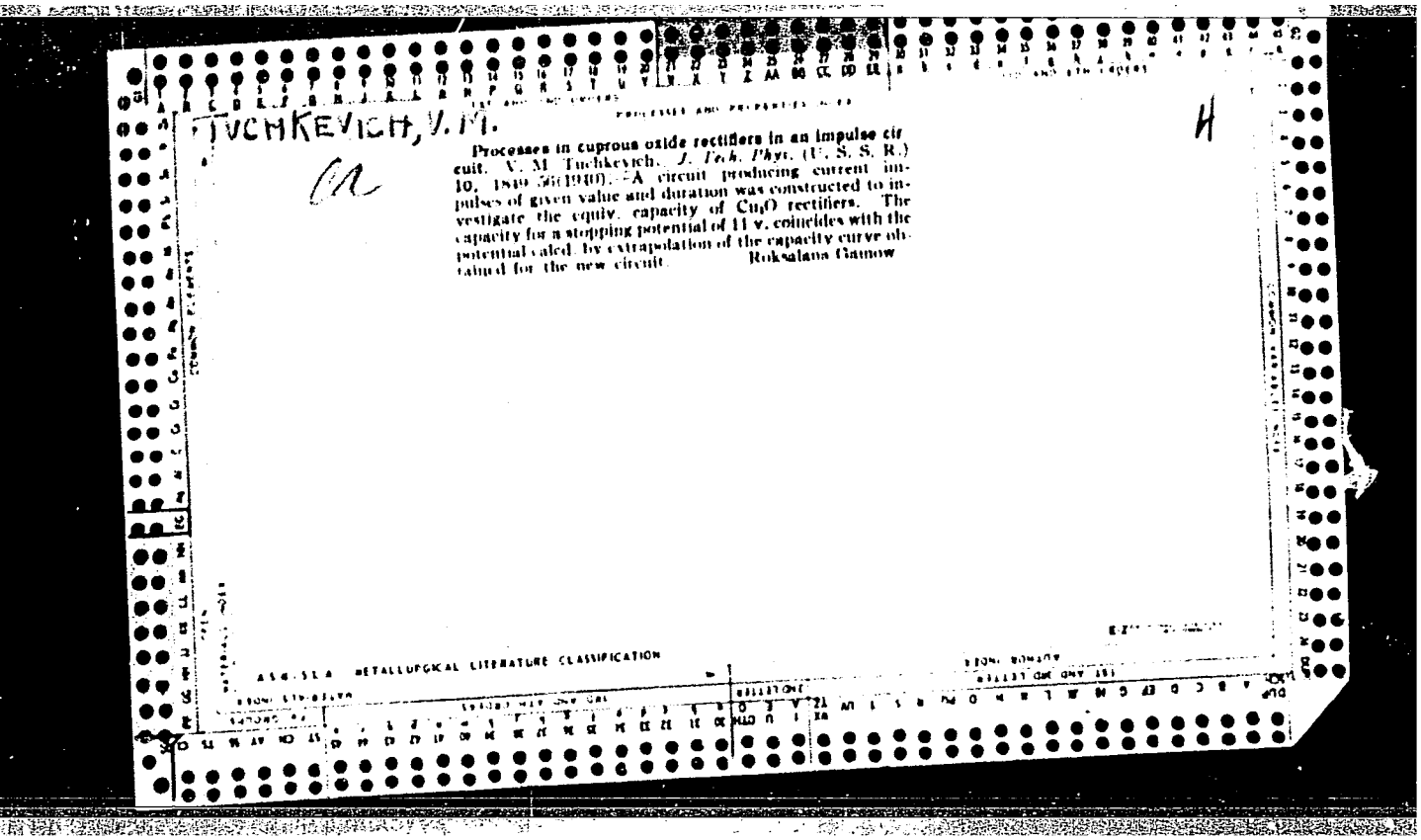
TUCHKEVICH, V. M.

Effect of oxygen concentration in oxidizing and tempering furnaces on the direct and reverse currents of cuprous oxide rectifiers. V. M. Tuchkevich. *J. Tech. Phys.* (U. S. S. R.) 10, 747-51(1940). Expts. show that the variations of the O content from 20 to 100% in oxidizing, and from 0 to 100% in the tempering furnaces do not essentially affect the values of the direct and reverse currents of the rectifiers obtained. Roksalana Ganow

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION



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A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

TUCHKEVICH, V. M.

Feb 47

USSR/Frequency Measurements
Impedance - Measurements

"Interpretation of Homogeneous Resistance Measurements for Various Frequencies," V. K. Subashiyev, V. M. Tuchkevich, 18 pp

"Zhur Tekh Fiz" Vol XVII, No 2

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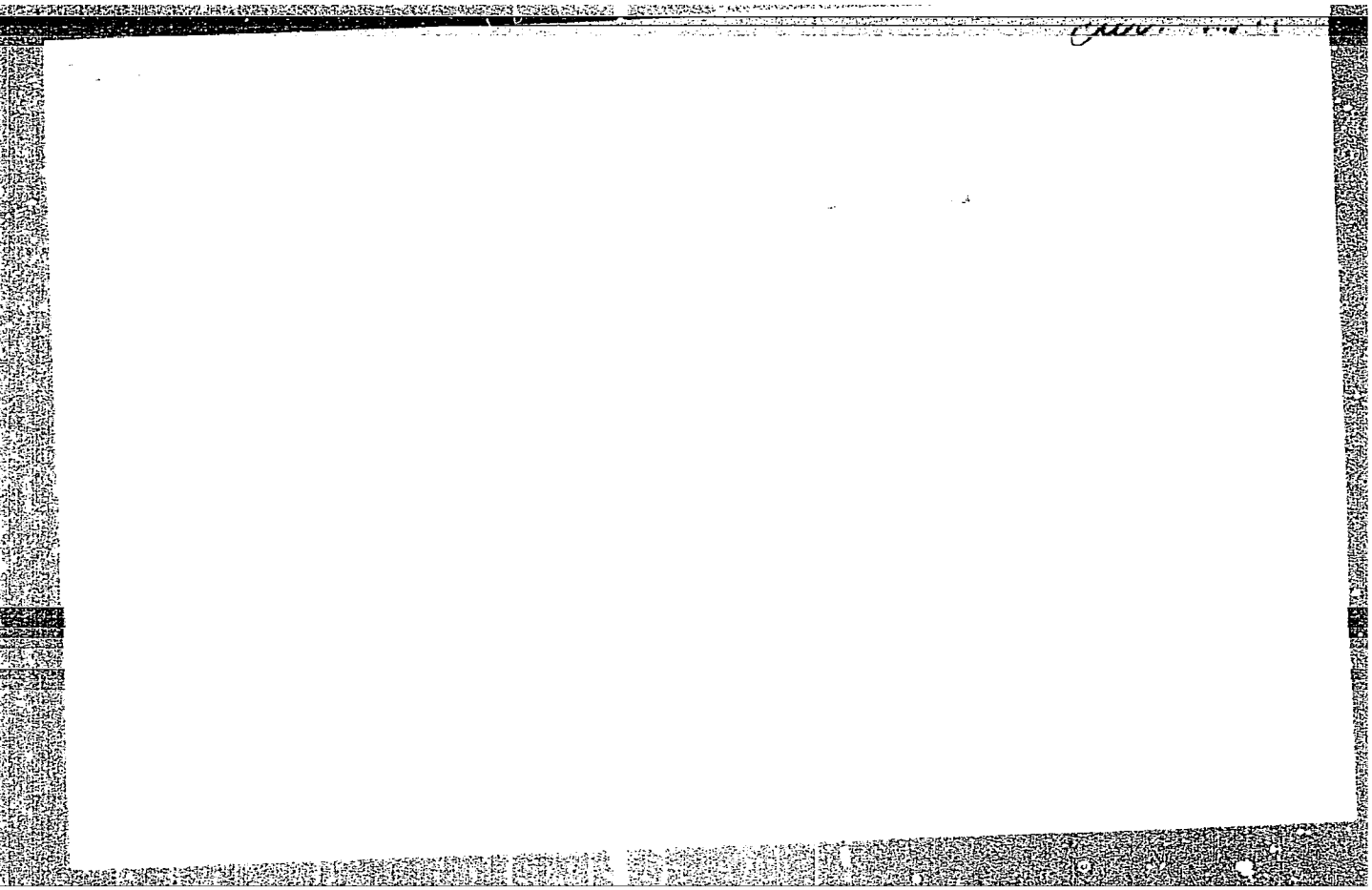

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TUCHKEVICH, V.M., redaktor; GESSEN, L.V., redaktor; SHAPOVALOV, V.I., tekhnicheskiy redaktor

[Semi-conducting materials; translated from the English] Poluprovodnikovye materialy. Per. s angliiskogo. Moskva, Izd-vo inostrannoi literatury, 1954. 370 p. (MLRA 8:3)
(Semiconductors)

TUCHKEVICH, V.M.

FD-2398

USSR/Physics - Photodiodes

Card 1/1 Pub. 153-2/21

Author : Alferov, Zh. I.; Konovalenko, B. M.; Ryvkin, S. M.; Tuchkevich, V. M.; and Uvarov, A. I.

Title : Flat germanium photodiodes

Periodical : Zhur. tekh. fiz. 25, 11-17, Jan 1955

Abstract : The authors describe the principal properties of germanium photodiodes of unique design and free from the usual deficiencies. In this design the illuminated area is not limited by the length of the diffusion displacement and can reach very large sizes corresponding to the total area of the n-p transition. They conclude: the germanium photodiode is a photocell valve to which considerable voltages can be applied in the closed direction; the sensitivity of the photodiode is about 300 times that of photocells with external photoeffect; the proper time of germanium photodiodes studied is about $1/10^5$ second, and can be decreased by decrease of the thickness of the n-germanium layer; the characteristics are very stable and free of "fatigue". Deficiencies are considerable temperature dependence of the dark current. The authors thank D. N. Nasledov, N. V. Shchetinina, and L. P. Bogomazov. Three references, including one USSR (S. M. Ryvkin, same issue, p. 21).

Institution: --

Submitted : October 13, 1954

FD-2399

TUCHKEVICH, V M.
USSR/Physics - Photodiodes

Card 1/1 Pub. 153-3/21

Author : Konovalenko, B. M.; Ryvkin, S. M.; and Tuchkevich, V. M.

Title : Sensitivity of germanium photodiodes to x-rays

Periodical : Zhur. tekh. fiz. 25, 18-20, Jan 1955

Abstract : Numerous attempts have been made to utilize photocell valves as dosimeters of x-rays (e.g. V. M. Tuchkevich, Phys. ZS d. Sow. 5, 1934 and 7, 1935; I. M. Polyak and M. N. D'yachenko, ZhTF 22, 1952), but without practical results in consequence principally of the insufficient sensitivity. Recently a new type has been investigated, namely the germanium photodiode (same issue, p. 11; see preceding abstract). In the present article the authors expound certain results of their efforts on this problem; namely, they compare the sensitivity of germanium photodiodes and certain photocell valves under various conditions. They point to the possibility of the practical utilization of n-p transitions in germanium as dosimeters of intense x-rays (e.g. direct radiation). They thank D. N. Nasledov and N. I. Dodon.. Six references: e.g. I. Shive, JOSA, 43, 1953.

Institution: --

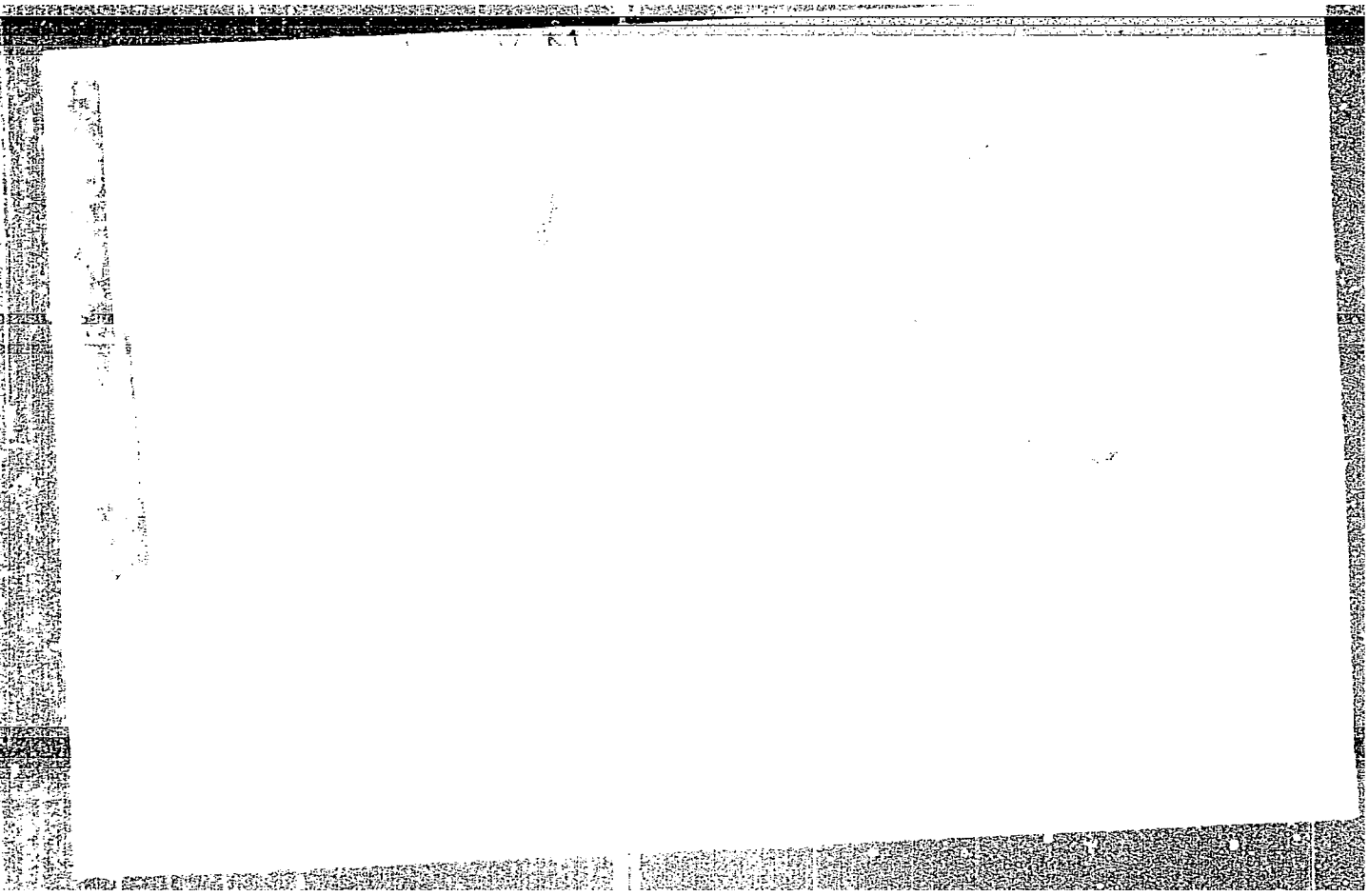
Submitted : October 13, 1954

TUCHKEVICH, V.M.

TEPLOVA, A.P.;TUCHKEVICH, V.M.;UVAROV, A.I.

Measurement of the active and reactive components of the input resistance of a crystal amplifier by the method of varying the resistance of a generator. Zhur.tekh.fiz. 25 no.12:2112-2118 O '55. (MLRA 9:1)

(Transistors) (Electronic measurements)



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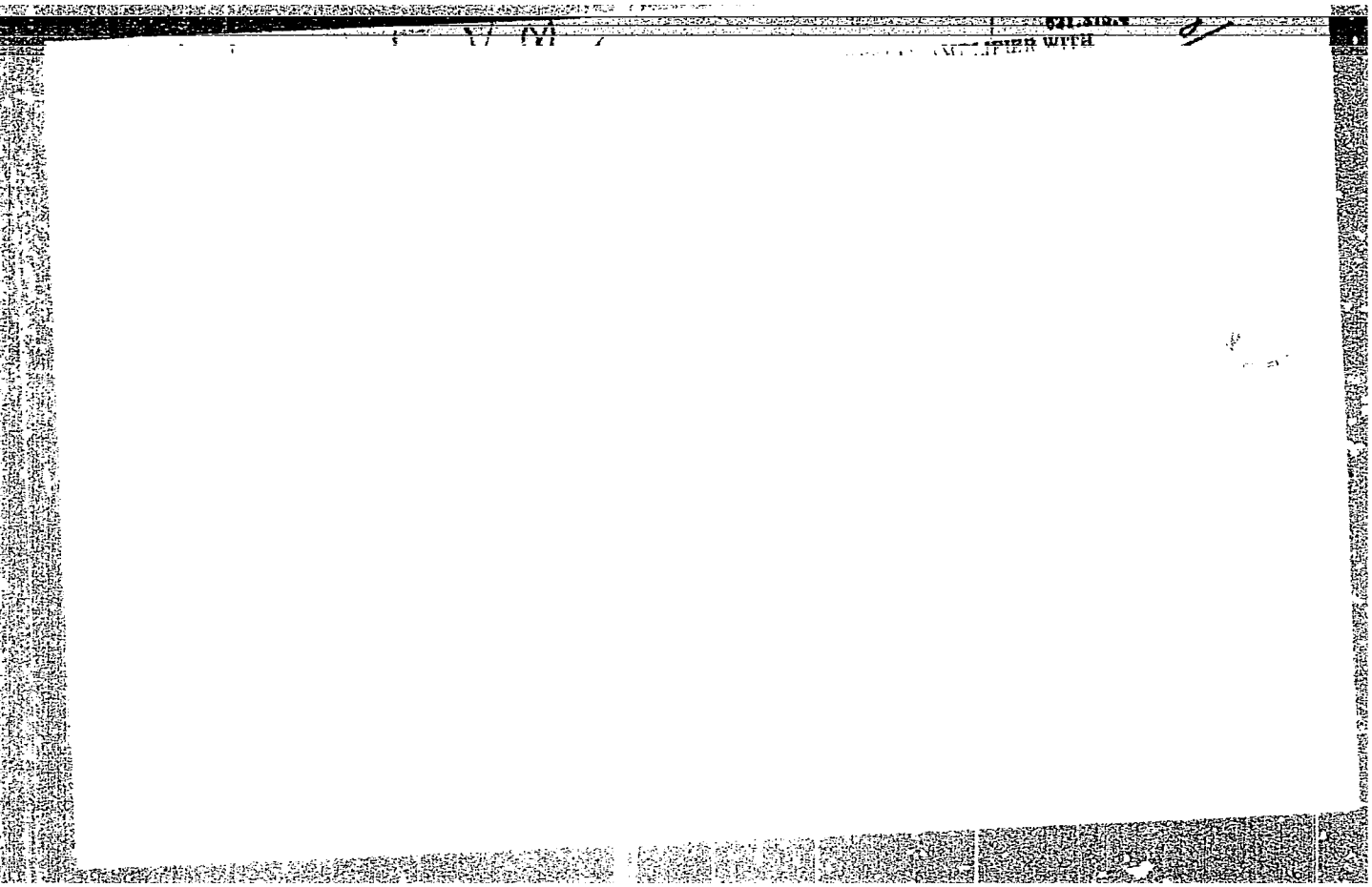

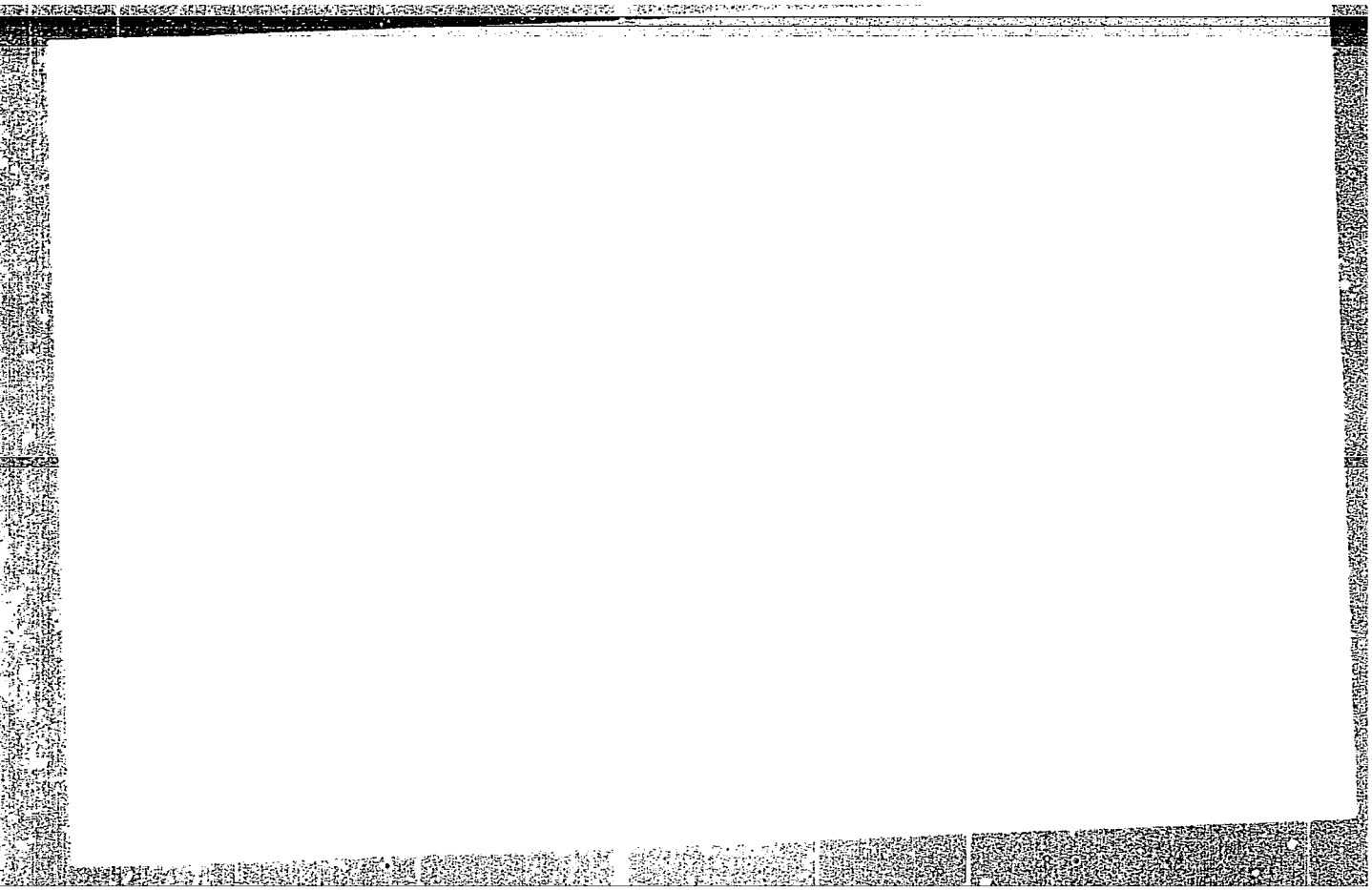

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Tuchkevich, V. M.

537.311.33

5877 INVESTIGATION OF THE RESISTANCE VARIATION OF GERMANIUM IN A MAGNETIC FIELD V.I.Stafeev and V.M.Tuchkevich. Zh. tekh. Fiz., Vol 26, No. 2, 273-6 (1956). In Russian

The characteristics $\Delta\rho/\rho_0 = f(H)_T$ are power functions with varying exponents. This applies to strong and weak fields. The field strength corresponding to a bend in curves on a double-logarithmic scale shifts with higher temperatures to stronger fields, this agreeing with theoretical expectations. The character of the function $\Delta\rho/\rho_0 = f(H)_T$, however, and particularly the variation of the exponent, is in contradiction to theory.

Electrical Research Association

TUCHKEVICH, V M.

CARD 1 / 2 PA - 1552

SUBJECT USSR / PHYSICS
AUTHOR LEBEDEV,A.A., STAFEEV,V.I., TUCKEVIČ,V.M.
TITLE Some Properties of the Diodes consisting of Germanium with a Gold Admixture.
PERIODICAL Žurn.techn.fis, 26, fasc.10, 2131-2141 (1956)
Issued: 11 / 1956

As gold atoms form two acceptor levels which are deep in the forbidden zone, the properties of germanium may depend in a high degree on the ratio of the concentrations of the gold atoms and any donor admixture in the germanium. Let it be assumed that N_{Au} and N_D denote the concentration of the gold atoms and donor atoms respectively.

At $N_{Au} > N_D$ the germanium has hole-conductivity (here called germanium of the I.type), but at $2 N_{Au} > N_D > N_{Au}$ it is electronic and the temperature dependence of the conductivity depends on the distance of the upper acceptor level of the gold from the bottom of the conductivity zone ($\Delta E = 0,2$ eV). (Here called germanium of the II. type). However, in the case of $N_D > 2N_{Au}$ all gold levels are stopped up at all temperatures, and the germanium then has electronic conductivity. (Here called germanium of the III. type). The admixture of gold exercises hardly any influence at all on the temperature dependence of conductivity. The diodes produced from germanium of the I. II. and III. types are here described as diodes of the I.II. and III. groups. The properties of Ge III are not deter-

mined by the admixture of gold but only by the donor admixture, and they offer nothing new. Therefore only the diodes of groups I and II are investigated here. The temperature dependence of direct amperage in the diodes. At first the oscillograms of the diodes of the first group, made at room temperature and at higher temperatures, are given and discussed. After a certain (critical) voltage has been attained, the voltage on the diode declines sharply. If amperage is further increased, voltage remains constant. The discontinuity of the characteristic (breakdown) is most noticeable in the diodes of the II. group. The voltampére characteristics of this group deviates already below -50° C from the characteristic of the usual diodes. At still lower temperatures breakdown takes place. In the case of the diodes of the II. group the disruptive voltage grows rapidly within the range of from -160° to -200° C. The probable causes of these phenomena are discussed. The breakdown characteristic, by the way, depends on the intensity of illumination and on the field strength of a magnetic field which may possibly exercise its influence.

INSTITUTION: LFTI (= Leningrad Physical-Technical Institute) Leningrad.

TUCHKEVICH, V. M. (Dr. Phys. Maths. Sci.)

"The Need for Introducing Semi-conducting Apparatus, Taking into Account Their Specific Properties and the Working Conditions of the Automatic Devices,"

paper read at the Session of the Acad. Sci. USSR, on Scientific Problems of Automatic Production, 15-20 October 1956.
Avtomatika i telemekhanika, No. 2, p. 182-192, 1957.

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TUCHKEVICH, V.M.

Some properties and used of silicon. Poluprov.prib. i ikh prim. no.3:3-12 '58. (MIRA 12:4)
(Silicon)

AUTHORS: Stafeyev, V. I., Tuchkevich, V. M. SOV/57-58-8-3/37

TITLE: Dependence of the Hall Constant Upon Temperature and Magnetic Field Strength in p-Type Germanium (Zavisimost' postoyannoy Kholla ot temperatury i napryazhennosti magnitnogo polya v germanii p-tipa)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1958, Nr 8, pp 1642-1645 (USSR)

ABSTRACT: This is an investigation of the function of the Hall-(Kholl) constant versus H and T. The same samples of hole-conducting germanium were used as in reference 4. Data concerning these samples are therefore omitted. R was measured in a usual d. c. circuit and with a constant magnetic field. Hole-conducting semiconductors exhibit a pronounced dependence of R upon H in weak fields. At H > 4000 Oe and -145°C and at H > 8000 Oe and at room temperature a complete saturation is attained. The saturation resistance is smaller by a factor of 1,5 than that in weak fields. The sample in question exhibited a mixed conductivity of 53 Ohm . cm. Another sample with 1,47 Ohm displayed curves which above + 50°C are practically parallel. The dependence of the temperature at which the Hall constant tends towards zero upon the magnetic field strength is

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described. It is contrary to that expected from theoretical considerations. $T_{R=0}$ varies by 7°C at a field strength variation reaching almost 20 500 Oe. A similar dependence of $T_{R=0}$ upon H was found in all hole-conducting germanium samples. The function of R versus T is given for a few values of the magnetic field strength. The weaker the field, the more rapidly the Hall-constant will increase at a temperature rise. At H = 2200 Oe this gradient reaches 30% of that at lower temperatures. In strong fields R is almost independent of temperature in the whole range of impurity conduction. Previous to the decrease of R, however, a small increase of R is observed when the state of mixed conduction is approached in fields not exceeding 19 300 Oe. It is absolutely impossible to ascribe the increase of the Hall-constant at a temperature rise to a real reduction of the number of current carriers. As an explanation of the anomalous behaviour of p-germanium a model with three types of carriers was advocated in reference 9: electrons, "ordinary" holes and "fast" holes. The results obtained in this investigation can all be explained with the

help of this model. The conception of "fast" holes is at present a mere hypothesis. Ye. Solov'yev assisted in a few of the measurements. There are 5 figures and 17 references, 3 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut AN SSSR (Leningrad Physical and Technical Institute, AS USSR)

SUBMITTED: April 10, 1958

24(6)
AUTHORS: Tuchkevich, V. M., Shmartsev, Yu. V. SOV/57-58-12-9/15

TITLE: On the Problem Hall Coefficient Dependence on the Strength of the Magnetic Field in p-Type Germanium (K voprosu o zavisimosti koeffitsiyenta Kholla ot napryazhennosti magnitnogo polya v germanii p-tipa)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1958, Nr 12, pp 2707-2710 (USSR)

ABSTRACT: In the paper cited by reference 5 a theory of the dependence of the Hall coefficient on the strength of the magnetic field was laid down. In the calculations carried out there an agreement of the theoretical calculations with experimental data could be reached. In this instance the variation of the mobility of light and heavy holes in an external magnetic field was taken account of. As, however the change in concentration could also be the reason for the dependence of the Hall coefficient on the strength of the magnetic field; this means a deerease in concentration of the light holes together with an increase in concentration of the heavy holes so that the sum of their concentrations remains constant: $p_L + p_H$ = constant. This phenomenon may be due to a separation of the valence zones of light and heavy holes under the action

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of an external magnetic field. Therefore a certain activation energy for the formation of light holes will occur. Formula (12) for the ratio of the concentrations of light and heavy holes is written down. To simplify this formula the dependence of the charge carrier motion on the magnetic field is neglected. It can be shown that this assumption does not change the qualitative course of the dependence of the Hall coefficient on the strength of the magnetic field. This is very well admissible under conditions assumed in the present case for a rough calculation. From formula (10) (Ref 5) formula (13) is obtained for the Hall coefficient. It is shown that theory and experiment disagree very much. Therefore more exact theoretical considerations concerning the choice of the ratio between light and heavy holes μ_L^o / μ_H^o are necessary. In order to carry out quantitative calculations and to compare the theory with the experiment also the course taken by the function ΔE ($\mathcal{H}$) must be determined. $\mathcal{H}$ denotes the field and ΔE - the activation energy of light holes. There are 4 figures and 13 references, 1 of which is Soviet.

Leningrad Phys.-Tech Inst. AS USSR

AUTHORS: Ryvkin, S. M., Strokan, N. B., Tuchkevich, V. M., Chelnokov, V. Ye. 57-28-6-5/34

TITLE: Silicon Photodiodes (Kremniyevyye fotodiody)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 6, pp. 1165-1168 (USSR)

ABSTRACT: In the present report the results obtained by investigating the possibility of utilizing silicon p-n photoelements for the purpose of transforming light signals into electric signals in the photodiode regime are described. It could be taken for granted from the very beginning that silicon photodiodes, which are of somewhat lower integral sensitivity, must offer some advantages compared to germanium photodiodes (reference 3), viz. a lower "dark current" and a lower degree of inertia. Further, the results obtained by investigating the basic properties of the silicon photodiodes LFTI produced in the laboratory are described. The sensitivity of samples to the light of the incandescent lamp with a color temperature of the filament of $\sim 2850^{\circ}C$ fluctated between 5 and 7 mm/lumen

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(figure 1). The photodiodes have the same sensitivity along the entire illuminated surface (figure 2). The dependence of sensitivity on light intensity is linear (figure 3). The volt-ampère characteristics of the photodiodes are shown (figures 4a and 4b). Estimation of the time needed for "flying through" t_o resulted in the value $t_o \simeq \frac{w^2}{2D} \approx 3 \cdot 10^{-8}$ sec. Finally, the authors endeavored to estimate the life of the minority carriers τ in the photodiodes investigated by studying the kinetics of the photoelectromotive valve force Φ. When measuring τ, $\tau \sim 1 \cdot 10^{-6}$ sec was obtained as a result. This amount must be considered to be merely the upper limit of the τ value as it corresponds to the duration of the front amplification of the light impulses. For $\Phi \ll \frac{kT}{e}$ the relaxation curve is an exponent with a time constant $R_e C$, in which case $\frac{1}{R_e} = \frac{1}{R_o} + \frac{1}{R}$. The value of the capacity, which was determined

from $R_e C$, was found to be equal to approximately 2000 pf. This capacity value is greater than the one mentioned in the table, because it corresponds approximately to the zero-displacement on the n-p-transition. There are 5 figures, 1 table, and 7 references, 7 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut, AN SSSR (Leningrad Physical-Chemical Institute, AS USSR)

SUBMITTED: January 28, 1958

1. Silicon—Photoconductivity 2. Silicon—Photosensitivity 3. Silicon—Electrical properties 4. Silicon—Electron transitions 5. Mathematics

TITLE: Photodiodes

2116)

SOV/57-28-10-5/30

AUTHORS: Tsarkevich, V. P., Chelnokov, V. Ye.

TITLE: **Volt-Ampere Characteristics** of Diffusion n-p Junctions in Silicon (O vol'tampernoy kharakteristike diffuzionnykh kremniyevykh n-p- perekhodov)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, **Vol 28,** Nr 10, pp 2115-2123 (USSR)

ABSTRACT: This is an investigation of the current-voltage characteristics and of the temperature dependence of the photovoltage and of the photocurrent of diffusion silicon photodiodes. Similar investigations were also carried out with alloyed germanium photodiodes (which are covered by the paper cited by reference 4) by the author and coworkers. This paper starts out from the classic formula by Shockley (Shokli) (Ref 5). If an actual semiconductor diode is considered, the series resistance R_s of the thickness of the semiconductor material and of the contacts and the resistance shunting the junction in an inverse direction R_p must be taken into account. If this is done formula (1) is transformed into formula (2). The validity of this formula (2) was checked with diffusion silicon photocells in a rectifier and in

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a diode mode of operation. The photocurrent I_{ph} (that is the short-circuit current in an ideal photocell with $R_{[illegible]} = 0$) was measured with a photodiode mode of operation. The voltage of [illegible] open circuit V_o was measured by means of a compensation method. The function lg $I_{ph} = f(V_o)$ was determined by measurement [illegible] great number of photocells. The curves obtained for this [illegible]-tion are composed of three linear sections. The photocurrent versus photovoltage function can be specified for the individual sections by formula (3):

$$I_{ph} = I_o \left(e^{\frac{qV_o}{\beta kT}} - 1\right), \qquad (3)$$

where q denotes electronic charge, k the Botzmann constant, T the absolute temperature, and β a factor >1. In each recti-linear section the values of I_o and β are different, β, which is computed from the gradient of the rectilinear sections, differing from unity. The transition from the first to the second section always takes place at a voltage of about 0,[illegible] V. that

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Volt-Ampere Characteristics of Diffusion n-p Junctions in [illegible]

from the second to the third one at 0,4 ÷ 0,5 V, at room temperature. If the intensity of illumination is further increased the third section extends into a vertical straight. If the temperature is reduced, β increases in all three sections. No clearly defined saturation range was generally found to exist in the backward branch of the current-voltage curve obtained from diffusion electron-hole junctions in silicon. The backward resistance of such a sample is not constant and the curve is non-linear over its whole course. The resistance shunting the junction in an inverse direction decreases with the rise of the voltage applied in the reciprocal direction. The temperature dependence of the backward current measured at -2,5 V does not show an exponential course. The curves specifying the V_o versus temperature function at different intensities of illumination are presented. If this intensity is increased, the photocurrent and V_o also increase, the whole curve shifting towards higher values. The photocurrent versus temperature curve is given. From these curves may be seen that the photocurrent varies as the temperature, following a linear law with a temperature co-

Volt-Ampere Characteristics of Diffusion n-p Junctions in Silicon

efficient of $1 \div 5.10^{-5}$ v/degree, up to a certain temperature, above which the photocurrent decreases. This temperature is distinctive of different samples. The relation $\lg I_{ph} = f(V_o)$ was also investigated on alloyed junction-type germanium photodiodes, which were prepared in the FTI. The results are described in the paper cited by reference 4. V. G. Stronin, Graduate Student (Leningrad Polytechnical Institute imeni M. I. Kalinin), assisted with the measurements. There are 10 figures, 4 tables, and 13 references, 7 of which are Soviet.

SUBMITTED: July 10, 1958

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SOV/[illegible]-28-10-37/40

24(0)

AUTHORS: Loytsyanskiy, L. G., Paleyev, I. I., Tuchkevich, V. M.

TITLE: New Periodical on Technical Physics (Novyy zhurnal po tekhnicheskoy fizike)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, Vol 28, Nr 10, pp 2348-2349 (USSR) 1958

ABSTRACT: The Academy of Sciences, Belorusskaya SSR, publishes a new monthly periodical since the beginning of this year (1958). It is a journal of technical physics - "Inzhenerno-fizicheskiy zhurnal", which is destined to spread the knowledge of results of scientific physical research in practical engineering quarters. The two numbers of the periodical which have hitherto been published fully comply with this program. In Nr 1 of this periodical this article is contained: A. V. Ivanov and V. S. Yermolov present applications of operational calculus to the solution of the telegraph equations which are important for problems of mathematical physics. In Nr 2 a paper by A. V. Ivanov presents an approach to the solution of heat conduction problems by similar methods. A. I. Veynik presents a comparatively simple method of an approximative integration of heat conduction equations. P. P. Rusnkov and L. I. Loginov demonstrate,

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how it is possible to achieve a considerably increased precision of the methods of numerical integration of heat conduction equations by introducing additional nodes in the space network. N. S. Koshlyakov presents a calculation of definite integrals according to the method of mechanical quadratures. The greater part of the papers in the first two numbers of the periodical concerns problems of the hydrodynamics of heat exchange and of combustion. In Nr 1 of the periodical novel formula obtained on the basis of experimental experience specifying the drag of the flow through rough tubes is recommended by G. K. Filonenko. B. V. Kantorovich and A. P. Finyagin presented an approach to problems of the influence of an air excess on the combustion processes of powdered fuel and in particular on the expansion of the combustion zone. S. A. Gol'denberg presents a number of critical remarks on the modern theories of flame expansion in a turbulent flow and suggests an approximation method of computing the dimensions of the combustion zone. F. M. Polonskaya (a woman) and I. V. Mel'nikov investigate the possibility of a better approximation in a quantitative sense of the formulae for the heat transfer from bodies of different shape to surrounding gas flows by introducing the square root from the body

surface, as a characteristic length, into the condition of similarity, A. A. Polushkin approached the same problem for the case of a problem of internal flow. The short notes by M. G. Murasnko and V. P. Yablonskaya (a woman) fall to the same category of problems. These notes present information concerning problems of soil freezing and of the neat exchange in soils. The note by Yu. A. Mikhaylov is also pertinent to this field, dealing with convection drying, as well as that by V. V. Shibanovas, concerning the drag of granular layers. B. A. Grigor'yev and S. N. Fomichev present the theory of the method of determining optical coefficients of technical materials with the help of an albedometer. F. I. Fedorov deals with the problem of the reflection and the refraction of light in two-axial crystals. A. M. Samson utilizes the principle of invariants and thus finds approximation formulae for the angular distribution of the resonance radiation originating from a plane parallel slab. A. M. Kripskiy finds some rules governing the evaporation of the electrode material in light sources of spectroscopic apparatus as dependent upon the electrode shape and -material. Besides these papers, otners are published in this periodical, of which N. S. Svetitskiy, Z. I. Shlepkov, I. A. Kopopel'ko,

L. I. Tkachov, and D. Ya. Rastskaya are the authors. The periodical also incorporates items of "Critical Reviews and Bibliography", "From Abroad", and "Chronicle".

SUBMITTED: July 10, 1958

29758
S/194/61/000/006/033/077
D201/D302

26.2421

AUTHORS: Tuchkevich, V.M. and Chelnokov, V.Ye.

TITLE: Properties of silicon as required for its application in solar batteries

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1961, 25, abstract 6 G195 (V sb. Vopr. metallurgii i fiz. poluprovodnikov, M., AN SSSR, 1959, 8-12)

TEXT: The photo-emf of a photosensitive element increases with the increase of the lifetime of electrons and the decrease of specific resistance and whole mobility of intrinsic silicon. The magnitude of series resistance R_s, due to the contact resistance of the photo-element and the resistance of silicon, determines the shape of the load characteristic, of the photo-element current and consequently, the efficiency of the ideal converter. The load characteristic, of the photo-element current and consequently, the efficiency

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Properties of silicon...

of the ideal converter. The load characteristic is given of a photo-element having an area of 1.5 cm^2, the efficiency of which at a solar radiation of 60 mW/cm^2 is about 8% and at 93 mW/cm^2 reaches 9%. It may be seen from the curves with contact resistances 13-1.8 ohm that lowering the latter makes it possible to obtain nearly ideal load lines. In accordance with theoretical calculations it is possible to obtain for monocrystallic S_i, with concentration of impurities about 10^{19} cm^{-3}, an efficiency, with solar illumination, of about 22-23%. [Abstracter's note: Complete translation]

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24.3300

S/058/62/000/004/056/160
A058/A101

AUTHORS: Tuchkevich, V. M., Chelnokov, V. Ye.

TITLE: Silicon phototubes

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 22, abstract 4G183 (V sb. "Fotoelektr. i optich. yavleniya v poluprovodnikakh". Kiev, AN USSR, 1959, 339-344)

TEXT: Phototubes were prepared from Si with p-type conductivity and a specific resistance of the order of several ohm/cm. P-n junctions were produced as a result of diffusion from the gaseous phase of elements from the fifth group of the periodic system. The authors give the characteristics of the phototubes produced.

[Abstracter's note: Complete translation]

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66346
SOV/181-1-10-21/21

~~24(6)~~ 24.7600

AUTHORS: Orlova, N. S., Tuchkevich, V. M.

TITLE: Dependence of the Hall Coefficient on the Magnetic Field Strength in Silicon

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 10, pp 1631 - 1634 (USSR)

ABSTRACT: Rectangular parallelepipeds (l=10-15 mm, d=1.5-3mm, h=3 mm) were cut out of silicon ingots produced according to Chokhral'skiy. The afore-mentioned dependence of seven samples, whose ρ- and μ-values are listed in table 1, was measured here (for sample Nr 1 cf. figure 1). The measuring probes were pressed onto the sample surface by means of springs, and the points of contact were coated with gallium. Measurement was made in a permanent magnetic field and by applying direct current with the help of a compensated measuring arrangement. The sample temperatures were measured by means of a copper-constantan thermocouple. Measurements have shown that the Hall coefficient increases linearly with rising field strength up to field strengths of 9 kOe. From 10-11 kOe onward, the saturation value is attained. This holds for 300, 136, and

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Dependence of the Hall Coefficient on the Magnetic Field Strength in Silicon

114°K. The course of the ratio $\frac{R}{R_{max}}$ for n-silicon is in qualitative agreement with the course of the same ratio for p-silicon. Figure 2 illustrates the relative variation in the Hall coefficient of a p-silicon sample as dependent on magnetic field strength at 300, 136, and 114°K. There are 2 figures, 1 table, and 10 references, 1 of which is Soviet.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Institute of Physics and Technology of the AS USSR)

SUBMITTED: March 12, 1959

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S/058/62/000/003/066/092
A061/A101

19.3700

AUTHORS: Romanenko, V. N., Tuchkevich, V. M.

TITLE: Production of homogeneous materials by the zone leveling method

PERIODICAL: Referativnyy zhurnal, Fizika, no. 3, 1962, 11, abstract 3E93 (Sb. "Vopr. metallurgii i fiz. poluprovodnikov", Moscow, AN SSSR, 1961, 46-50)

TEXT: Using Pfann's approximation, formulae are derived that permit the impurity distribution to be established in a bar after the N-th cycle of liquid zone motion in counter-current zone leveling. If the segregation coefficient k is considerably less than unity, the impurity distribution in the cases considered [on an average uniform initial distribution of impurities (1), and introduction of impurities into the initial zone (2)] fairly well approaches uniformity already after the first leveling cycle. Leveling is the better the smaller k and the greater the relative liquid zone length. A method of determining k and its concentration dependence in zone leveling is presented.

B. Sokolov

[Abstracter's note: Complete translation]

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L 11043-63 EWT(1)/EWG(k)/BDS/EEC(b)-2 AFFTC/ASD/ESD-3 Pz-4 AT/IJP(C)
S/2927/62/000/000/0076/0083 68 65

ACCESSION NR: AT3002983

AUTHOR: Alferov, Zh. I.; Trukan, M. K.; Tuchkevich, V. M.

TITLE: Investigating isothermal current-voltage characteristics of germanium p-i-n structures [Report at the All-Union Conference on Semiconductor Devices, Tashkent, 2-7 October, 1961]

SOURCE: Elektronno-dy*rochny*ye perekhody* v poluprovodnikakh. Tashkent, Izd-vo AN UzSSR, 1962, 76-83

TOPIC TAGS: germanium-rectifier characteristics, germanium rectifier heating, 2,000-a germanium rectifier, TGI1-400/16 thyratron, germanium rectifier

ABSTRACT: An extended experimental investigation of germanium power rectifiers having p-i-junction areas of 1.5 and 3 cm is described. The rectifiers were developed by Zh. I. Alferov, V. I. Stafeyev, and V. M. Tuchkevich (Izv. LETI, vol 42, 1960) for power-supply units. A cosine-wave-shape pulse with a 20-microsec plateau was chosen for determining the current-voltage characteristics to avoid overheating the rectifier during tests. A power-pulse generator was designed with a TGI1-400/16 thyratron; it could develop up to 2,000-amp current, at 0.5-10-cps repetition rate, with a 200-500-microsec pulse duration. The measurements were made at 1 cps and 300

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microsec pulse duration. Isothermal current-voltage characteristics of 8 germanium rectifiers were determined and compared with theoretical curves for p-i-metal and p-i-n structures. A special method for measuring temperature of a p-n junction during the forward-current half-cycle was developed. It is based on measuring the forward voltages and comparing it with the current-voltage characteristic. Oscillograms, current-voltage characteristics, and temperature-current curves are given in the article. "The authors express their gratitude to G. V. Gordeyev for a useful discussion and help in calculations and to V. I. Stafeyev for discussing the results of investigation." Orig. art. has: 10 figures and 5 formulas.

ASSOCIATION: Akad. nauk SSSR(Academy of Sciences SSSR); Akad. nauk UzSSR(Academy of Sciences UzSSR); Tashkentskiy gosuniversitet im. V. I. Lenina (Tashkent State University)

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SUB CODE: 00 NO REF SOV: 002 OTHER: 001

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